

Appendix B

Metric Conversion Tables

Table 1-1M: System Kilometers Within the United States (Statute Kilometers)

	1960	1965	1970	1975	1980	1985	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000
Highway ^a	5,706,240	5,937,942	6,002,985	6,176,897	6,211,806	6,218,364	6,223,214	6,250,563	6,278,181	6,284,828	6,287,055	6,296,117	^R 6,308,068	^R 6,350,265	^R 6,286,564	6,304,192	6,334,747
Class I rail ^{b,c}	333,672	321,544	316,202	308,222	265,255	234,584	192,732	187,691	181,946	177,712	175,953	174,234	170,235	164,359	161,852	160,017	194,082
Amtrak ^c	N	N	N	N	38,624	38,624	38,624	40,234	40,234	40,234	40,234	38,624	40,234	40,234	35,406	37,015	37,015
Transit ^d																	
Commuter rail ^c	N	N	N	N	N	5,752	6,649	6,498	6,457	6,583	6,583	6,695	5,926	7,108	8,324	8,354	U
Heavy rail	N	N	N	N	N	2,081	2,174	2,203	2,258	2,336	2,342	2,346	2,379	2,457	2,457	2,478	U
Light rail	N	N	N	N	N	618	777	887	898	865	904	913	1,027	1,061	1,088	1,291	U
Navigable channels ^e	40,234	40,234	41,843	41,843	41,843	41,843	41,843	41,843	41,843	41,843	41,843	41,843	41,843	41,843	41,843	41,843	41,843
Oil pipeline ^f	307,295	339,358	351,917	363,533	351,469	343,764	335,954	328,029	^R 316,309	^R 312,181	^R 306,339	^R 292,759	285,715	289,478	287,506	285,599	U
Gas pipeline ^g	1,015,416	1,235,204	1,469,761	1,575,971	1,692,666	1,800,655	1,942,308	1,972,023	2,017,995	2,013,442	2,024,508	2,031,237	2,054,030	2,013,610	^R 2,082,913	2,165,181	U

KEY: N = data do not exist; R = revised; U = data are not available.

^a All public road and street kilometers in the 50 states and the District of Columbia. For years prior to 1980, some kilometers of nonpublic roadways are included. No consistent data on private road kilometers are available. Beginning in 1998, approximately 69,200 kilometers of Bureau of Land Management Roads are excluded.

^b Data represent kilometers of road owned (aggregate length of road, excluding yard tracks, sidings, and parallel lines).

^c Portions of Class I freight railroads, Amtrak, and commuter rail networks share common trackage. Amtrak data represent kilometers of track operated.

^d Transit system kilometers is measured in directional route-kilometers. A directional route-kilometer is the kilometer in each direction over which public transportation vehicles travel while in revenue service. Directional route-kilometers are computed with regard to direction of service, but without regard to the number of traffic lanes or rail tracks existing in the right-of-way.

^e The St. Lawrence Seaway is not included in this number because 3 of the 5 subsections are solely in Canadian waters, and the others are in international boundary waters. Of the 41,800 kilometers of navigable waterways, 17,500 kilometers are commercially significant shallow-draft inland waterways subject to fuel taxes.

^f Includes trunk and gathering lines for crude-oil pipeline.

^g Excludes service pipelines. Data not adjusted to common diameter equivalent. Kilometers as of the end of each year. Includes field and gathering, transmission, and distribution mains. See table 1-8 for a more detailed breakout of oil and gas pipeline kilometers.

NOTE: Numbers may differ slightly from previous year's metric tables because a higher precision conversion factor was used. 1.609344 kilometers = 1 mile.

SOURCES:

Highway:

1960-95: U.S. Department of Transportation, Federal Highway Administration, *Highway Statistics Summary to 1995*, FHWA-PL-97-009 (Washington, DC: Annual issues), table HM-212.

1996-98, 2000: Ibid., *Highway Statistics* (Washington, DC: Annual issues), table HM-20.

1999: Ibid., personal communication, May 2002.

Class I rail:

1960-99: Association of American Railroads, *Railroad Facts* (Washington, DC: 2000), p. 44.

2000: Ibid., *Railroad 10-Year Trends*, personal communications, Sept. 19, 2001.

Amtrak:

1980: Amtrak, Corporate Planning and Development, personal communication (Washington, DC).

1985-2000: Amtrak, Corporate Planning and Development, *Amtrak Annual Report, Statistical Appendix* (Washington, DC: Annual issues).

Transit:

1985-99: U.S. Department of Transportation, Federal Transit Administration, *National Transit Database* (Washington, DC: Annual issues) table 20 and similar tables in earlier editions.

Navigable channels:

1960-96: U.S. Army Corps of Engineers, Ohio River Division, Huntington District, *Ohio River Navigation System Report, 1996, Commerce on the Ohio River and its Tributaries* (Fort Belvoir, VA: 1996), p. 2.

1997-99: Waterborne Commerce Statistics Center Databases, personal communication, Aug. 3, 2001.

Oil pipeline:

1960-99: Eno Transportation Foundation, Inc., *Transportation in America, 2000* (Washington, DC: 2001), p. 44.

Gas pipeline:

1960-99: American Gas Association, *Gas Facts* (Arlington, VA: Annual issues), table 5-2 and similar tables in earlier editions.

Table 1-6M: Estimated U.S. Roadway Lane-Kilometers by Functional System^a

	1980	1985	1990	1991	1992	1993	1994	1995	1996	1997	^{R,d} 1998	^R 1999	2000
TOTAL lane-kilometers	12,749,503	12,903,711	12,956,959	13,016,041	13,074,455	13,087,501	13,104,911	13,129,436	13,162,268	^R 13,264,917	13,133,628	13,161,180	13,234,268
Urban													
Interstates	77,986	92,207	100,124	101,109	108,254	111,341	113,993	114,870	115,535	^R 116,286	117,492	117,957	118,955
Other arterials ^b	536,995	598,111	642,733	647,536	673,041	700,686	712,093	717,491	723,368	^R 730,035	730,739	724,741	733,631
Collectors	233,561	261,320	270,000	266,005	283,465	289,123	295,078	297,780	300,823	^R 303,925	301,805	299,898	303,471
Local	1,396,888	1,530,515	1,675,546	1,693,477	1,765,643	1,801,744	1,817,300	1,831,224	1,849,870	^R 1,879,627	1,894,212	1,908,606	1,926,127
Total	2,245,429	2,482,154	2,688,403	2,708,127	2,830,403	2,902,894	2,938,464	2,961,365	2,989,596	^R 3,029,873	3,044,248	3,051,202	3,082,183
Rural													
Interstates	210,792	212,284	218,663	219,680	214,794	212,655	211,252	212,298	213,983	214,308	214,415	215,974	216,597
Other arterials ^b	816,095	820,773	832,581	833,339	847,664	846,364	852,659	854,089	857,549	^R 864,200	865,816	867,977	868,914
Collectors ^c	2,303,401	2,360,568	2,361,876	2,361,810	2,319,815	2,308,561	2,304,885	2,281,129	2,279,896	^R 2,283,075	2,278,467	2,275,643	2,276,683
Local	7,173,786	7,027,931	6,855,435	6,893,084	6,861,779	6,817,027	6,797,650	6,820,554	6,821,243	^R 6,873,460	6,730,682	6,750,384	6,789,892
Total	10,504,074	10,421,557	10,268,556	10,307,914	10,244,052	10,184,606	10,166,447	10,168,070	10,172,671	^R 10,235,043	10,089,380	10,109,978	16,338,197

KEY: R = revised.^a Includes the 50 States and the District of Columbia.^b For urban: the sum of other freeways and expressways, other principal arterials, and minor arterials. For rural: the sum of other principal arterials and minor arterials.^c Includes minor and major collectors.^d Beginning in 1998, approximately 138,400 lane-kilometers of Bureau of Land Management roads are excluded.**NOTES:** In estimating rural and urban lane kilometers, the U.S. Department of Transportation, Federal Highway Administration assumed that rural minor collectors and urban/rural local roads are two lanes wide.

Numbers may differ slightly from previous year's metric tables because a higher precision conversion factor was used.

SOURCES: 1980-95: U.S. Department of Transportation, Federal Highway Administration, Office of Highway Information Management, table HM-260 (unpublished).1996-2000: Ibid., *Highway Statistics* (Washington, DC: Annual issues), table HM-60. Internet address www.fhwa.dot.gov/ohim.ohimstat.htm as of Dec. 27, 2001.

Table 1-29M: U.S. Vehicle-Kilometers (Millions)

	1960	1965	1970	1975	1980	1985	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000
Air																	
Air carrier, large certificated, domestic, all services	1,381	1,825	3,328	3,135	4,060	4,902	6,378	6,202	6,429	6,690	7,049	7,450	7,743	7,903	8,103	8,582	9,086
General aviation ^a	2,847	4,123	5,161	6,820	8,375	7,520	7,319	7,081	5,576	5,235	5,404	6,107	5,671	6,239	N	N	N
Highway																	
Passenger car ^{b,c}	944,704	1,163,066	1,475,286	1,663,981	1,788,940	2,006,527	2,266,384	2,185,787	2,207,326	2,212,380	2,262,881	^R 2,314,710	2,365,501	2,418,129	2,493,802	2,525,222	2,578,031
Motorcycle ^b	^h	^h	4,794	9,059	16,438	14,622	15,381	14,771	15,381	15,942	16,480	15,767	15,965	16,224	16,549	17,033	16,864
Other 2-axle 4-tire vehicle ^c	^h	^h	198,410	322,995	468,214	629,191	924,682	1,045,098	1,137,586	1,200,168	1,230,559	1,271,428	1,314,094	1,369,132	1,397,353	1,450,054	1,487,063
Truck																	
Single-unit 2-axle 6-tire or more truck	158,602	207,234	43,583	55,693	64,073	73,130	83,527	85,131	86,702	91,366	98,627	100,914	103,114	107,654	109,469	113,143	113,592
Combination truck	46,436	50,960	56,543	75,195	110,527	125,630	151,827	155,535	160,146	165,949	175,309	185,800	191,349	200,499	206,574	213,051	217,596
Bus	6,994	7,533	7,313	9,745	9,751	7,207	9,215	9,254	9,299	9,857	10,314	10,332	10,562	11,011	11,277	12,331	12,233
Total highway^c	1,156,737	1,428,793	1,785,928	2,136,668	2,457,943	2,856,307	3,451,016	3,495,576	3,616,439	3,695,662	3,794,170	^R 3,898,951	4,000,585	4,122,648	4,235,024	4,330,835	4,425,379
Transit																	
Motor bus ^d	2,537	2,460	2,268	2,456	2,699	2,998	3,428	3,487	3,505	3,556	3,479	3,514	3,574	3,613	^R 3,500	^P 3,663	U
Light rail	120	67	54	38	28	27	39	44	46	45	55	56	61	66	^R 71	^P 79	U
Heavy rail	629	636	655	681	619	725	864	848	846	840	856	865	874	898	910	^P 930	U
Trolley bus	162	69	53	25	21	25	22	22	22	21	22	22	22	23	22	^P 23	U
Commuter rail	N	N	N	278	288	295	342	346	352	360	371	383	389	404	^R 418	^P 428	U
Demand responsive ^d	N	N	N	N	N	398	492	539	585	653	746	815	882	941	^R 1,080	^P 1,156	U
Ferry boat	N	N	N	N	ⁱ	ⁱ	4	4	4	4	3	5	4	^R 5	^R 5	^P 5	U
Other	N	N	N	24	25	24	^R 26	^R 31	^R 39	^R 48	^R 47	^R 55	^R 69	^R 80	^R 101	^P 111	U
Total transit^e	3,449	3,232	3,030	3,502	3,681	4,492	5,217	5,321	5,399	5,528	5,580	5,713	5,874	6,028	^R 6,106	^P 6,392	U
Rail																	
Class I freight, train-kilometers	650	678	687	649	689	558	612	604	628	653	710	737	754	764	764	789	811
Class I freight, car-kilometers	45,335	47,212	48,103	44,508	47,117	40,105	42,099	41,244	42,049	43,264	45,842	48,897	51,040	50,952	52,556	54,478	55,667
Intercity/Amtrak ^f , train-kilometers	336	277	150	48	48	48	53	55	55	56	55	51	48	51	53	55	56
Intercity/Amtrak ^f , car-kilometers	3,554	2,857	1,110	407	378	404	484	504	494	488	489	470	444	463	502	550	U
Total train-miles^g	987	954	837	697	737	607	665	658	682	709	764	789	803	816	818	843	U

KEY: N = data do not exist; P = preliminary; R = revised.

^a All operations other than those operating under 14 CFR 121 and 14 CFR 135. Data for 1996 are estimated using new information on nonrespondents and are not comparable to earlier years. Mileage in source is multiplied by 1.151 to convert to nautical-miles for 1985-1997. Data is then converted to kilometers.

^b U.S. Department of Transportation, Federal Highway Administration (FHWA), provides data separately for passenger car and motorcycle in its annual *Highway Statistics* series. However, the 1995 summary report provides updated data for passenger car and motorcycle combined. Passenger car figures in this table were computed by U.S. Department of Transportation, Bureau of Transportation Statistics by subtracting the most current motorcycle figures from the aggregate passenger car and motorcycle figures.

^c In July 1997, the FHWA published revised vehicle-kilometers data for the highway modes for many years. The major change reflected the reassignment of some vehicles from the passenger car category to the other 2-axle 4-tire vehicle category.

^d Motor bus and demand responsive figures are also included in the bus figure for highway.

^e Prior to 1985, excludes demand responsive and most rural and smaller systems funded via Sections 18 and 16(b)2, Federal Transit Act. The series is not continuous between 1980 and 1985. Transit rail modes are measured in car-kilometers. Car-kilometers measure individual vehicle-kilometers in a train. A 10-car train traveling 1 kilometer would equal 1 train-kilometer and 10 car-kilometers.

^f Amtrak began operations in 1971.

^g Although both train-kilometers and car-kilometers are shown for rail, only train-kilometers are included in the total. A train-kilometer is the movement of a train, which can consist of multiple vehicles (cars), the distance of 1 kilometer. This differs from a vehicle-kilometer, which is the movement of 1 vehicle the distance of 1 kilometer. A 10-vehicle train traveling 1 kilometer would be measured as 1 train-kilometer and 10 vehicle-kilometers. Caution should be used when comparing train-kilometers with vehicle kilometers.

^h 1960-65, motorcycle data are included in passenger car, and other 2-axle 4-tire vehicle data included in single-unit 2-axle 6-tire or more truck.

ⁱ Ferry boat included with other.

NOTE: Numbers may differ slightly from previous year's metric tables because a higher precision conversion factor was used.

SOURCES:

Air:

Air carrier:

1960: Civil Aeronautics Board, *Handbook of Airline Statistics 1969* (Washington, DC: 1970), part III, table 2.

1965-70: Ibid., *Handbook of Airline Statistics 1973* (Washington, DC: 1974), part III, table 2.

1975-80: Ibid., *Air Carrier Traffic Statistics* (Washington, DC: 1976, 1981), p. 4 (December 1976) and p. 2 (December 1981).

1985-2000: U.S. Department of Transportation, Bureau of Transportation Statistics, Office of Airline Information, *Air Carrier Traffic Statistics* (Washington, DC: Annual December issues), p. 2, line 27 plus line 50.

General aviation:

1960-65: U.S. Department of Transportation, Federal Aviation Administration, *FAA Statistical Handbook of Aviation* 1972 (Washington, DC: 1973), table 9.10.

1970-75: U.S. Department of Transportation, Federal Aviation Administration, *FAA Statistical Handbook of Aviation* 1976 (Washington, DC: 1976), table 8-5.

1980: U.S. National Transportation Safety Board estimate, personal communication, Dec. 7, 1998.

1985-92: Ibid., *General Aviation Activity and Avionics Survey* (Washington, DC: Annual issues,) table 3.3.

1993-97: Ibid., *General Aviation and Air Taxi Activity and Avionics Survey* (Washington, DC: Annual issues), table 3.3.

Highway:

Passenger car and motorcycle:

1960-94: U.S. Department of Transportation, Federal Highway Administration, Highway Statistics Summary to 1995, Internet site

<http://www.fhwa.dot.gov/ohim/summary95/index.html>, as of July 28, 2000, table VM-201A.

1995-2000: Ibid., *Highway Statistics* (Washington, DC: Annual issues), table VM-1, and Internet site www.fhwa.dot.gov/ohim/ohimstat.htm.

Motorcycle:

1970-80: U.S. Department of Transportation, Federal Highway Administration, *Highway Statistics, Summary to 1985* (Washington, DC: 1986), table VM-201A.

1985-2000: Ibid., *Highway Statistics* (Washington, DC: Annual issues), table VM-1, and Internet site www.fhwa.dot.gov/ohim/ohimstat.htm.

Other 2-axle 4-tire vehicle:

1970-94: U.S. Department of Transportation, Federal Highway Administration, Highway Statistics Summary to 1995, Internet site

<http://www.fhwa.dot.gov/ohim/summary95/index.html>, as of July 28, 2000, table VM-201A.

1995-2000: Ibid., *Highway Statistics* (Washington, DC: Annual issues), table VM-1, and Internet site www.fhwa.dot.gov/ohim/ohimstat.htm.

Single-unit 2-axle 6-tires or more truck, combination truck, and bus:

1960-94: U.S. Department of Transportation, Federal Highway Administration, Highway Statistics Summary to 1995, Internet site

<http://www.fhwa.dot.gov/ohim/summary95/index.html>, as of July 28, 2000, table VM-201A.

1995-2000: Ibid., *Highway Statistics* (Washington, DC: Annual issues), table VM-1, and Internet site www.fhwa.dot.gov/ohim/ohimstat.htm.

Transit:

1960-99: American Public Transit Association, *Public Transportation Fact Book* (Washington, DC: 2001), table 42, 84, and similar tables in earlier editions.

Rail:

Class I rail freight train- and car-miles:

1960-2000: Association of American Railroads, *Railroad Facts, 2000* (Washington, DC: 2001), p. 33 (train-miles) and p. 34 (car-miles).

Intercity/Amtrak train-miles:

1960-70: Association of American Railroads, *Yearbook of Railroad Facts* (Washington, DC: 1975), p. 39.

1975-2000: Amtrak, *Amtrak Annual Report*, Statistical Appendix (Washington, DC: Annual issues).

Intercity/Amtrak car-miles:

1960-75: Association of American Railroads, *Yearbook of Railroad Facts* (Washington, DC: 1975), p. 40.

1980-99: Amtrak, Amtrak Corporate Reporting, Route Profitability System, personal communication, 2000.

Table 1-30M: Roadway Vehicle-Kilometers Traveled (VKT) and VKT per Lane-Kilometer by Functional Class

	1980	1985	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000
VKT (millions)													
Urban													
Interstate	259,494	347,921	448,848	459,186	488,058	510,804	532,012	^R 549,636	565,812	581,619	602,896	616,545	633,148
Other arterials ^a	779,227	930,635	1,125,306	1,138,640	1,199,956	1,245,597	1,284,094	^R 1,311,889	1,343,196	1,362,566	1,388,854	1,412,675	1,448,078
Collector	133,645	144,162	171,068	172,652	186,789	189,721	193,263	^R 204,272	208,104	209,445	212,303	211,708	217,770
Local	204,051	257,595	307,470	303,157	318,821	322,525	322,968	^R 331,375	335,345	357,503	367,783	377,403	379,216
Total	1,376,417	1,680,313	2,052,693	2,073,635	2,193,623	2,268,647	2,332,337	^R2,397,173	2,452,457	2,511,132	2,571,836	2,618,331	2,678,212
Rural													
Interstate	217,397	248,414	322,147	329,933	330,812	335,239	346,923	359,498	374,277	386,653	404,782	418,526	432,673
Other arterials ^a	422,894	455,127	532,477	538,736	553,714	562,574	575,065	593,196	609,695	630,956	649,345	664,903	676,564
Collector ^b	304,919	332,602	386,983	395,303	378,051	364,188	371,000	380,043	387,900	409,359	414,982	425,423	430,358
Local	136,318	139,850	156,716	157,968	160,239	165,014	168,844	169,245	173,410	184,548	194,079	202,576	205,769
Total	1,081,527	1,175,993	1,398,324	1,421,941	1,422,816	1,427,015	1,461,833	1,501,983	1,545,282	1,611,517	1,663,188	1,711,428	1,745,364
VKT per lane-kilometers (thousands)													
Urban													
Interstate	3,327	3,773	4,483	4,542	4,508	4,588	4,667	^R 4,784	4,897	^R 5,002	^R 5,131	5,229	5,325
Other arterials ^a	1,451	1,556	1,751	1,758	1,783	1,778	1,803	^R 1,829	1,857	^R 1,866	^R 1,901	1,950	1,977
Collector	572	552	634	649	659	656	655	686	692	^R 689	^R 703	706	718
Local	146	168	184	179	181	179	178	181	292	^R 190	^R 194	198	197
Total	613	677	764	766	775	782	794	^R810	820	^R829	^R845	858	869
Rural													
Interstate	1,031	1,170	1,473	1,502	1,540	1,576	1,642	1,693	1,749	1,804	^R 1,888	1,939	1,998
Other arterials ^a	518	555	640	646	653	665	674	695	^R 711	^R 730	^R 750	766	779
Collector ^b	132	141	164	167	163	158	161	167	274	179	182	187	189
Local	19	20	23	23	23	24	25	25	25	27	29	30	30
Total	103	113	136	138	139	140	144	148	^R152	157	^R165	169	172

KEY: R = revised.

^a For urban: the sum of other freeways and expressways, other principal arterials, and minor arterials.

For rural: the sum of other principal arterials and minor arterials.

^b Collector is the sum of major and minor collectors (rural only).**NOTES:** See table 1-6 for estimated highway lane-kilometers by functional class.

Numbers may differ slightly from previous year's metric tables because a higher precision conversion factor was used. 1 mile = 1.609344 kilometers.

SOURCES: 1980-94: U.S. Department of Transportation, Federal Highway Administration, *Highway Statistics Summary to 1995*, FHWA-PL-97-009 (Washington, DC: July 1997), table VM-202.1995-1998, 2000: Ibid., *Highway Statistics* (Washington, DC: Annual issues), tables VM-2 and VM-2A.

1999: U.S. Department of Transportation, Federal Highway Administration, Office of Highway Information Management, personal communication, June 5, 2002.

Lane-kilometers:

1980-95: Ibid., Office of Highway Information Management, unpublished data, 1997, table HM-260.

1996-1998, 2000: Ibid., *Highway Statistics* (Washington, DC: Annual issues), table HM-60.

1999: Ibid., personal communication, June 5, 2002.

Table 1-31M: U.S. Passenger-Kilometers (Millions)

	1960	1965	1970	1975	1980	1985	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000
Air																	
Air carrier, certificated, domestic, all services	50,049	85,659	174,520	218,871	328,898	447,134	556,629	544,095	570,937	582,953	625,068	649,995	699,505	725,190	745,548	785,934	829,403
General aviation ^a	3,701	7,081	14,645	18,347	23,657	19,795	20,921	19,473	17,381	15,933	15,772	17,381	19,312	20,117	^R 21,082	21,726	U
Highway																	
Passenger car ^{b,c}	1,842,173	2,244,718	2,817,796	3,144,925	3,237,982	3,370,965	3,671,543	3,540,975	3,553,795	3,561,931	3,620,609	3,655,319	3,761,146	3,844,826	3,965,145	4,015,104	4,099,070
Motorcycle ^{b,c}	^g	^g	5,274	9,965	19,725	19,009	19,995	18,759	19,226	19,609	19,940	18,604	18,839	19,145	19,528	18,736	18,551
Other 2-axle 4-tire vehicle ^c	^h	^h	363,090	584,622	838,104	1,107,376	1,608,947	1,797,569	1,933,896	2,016,283	2,042,728	2,085,143	2,155,114	2,245,376	2,291,659	2,305,586	2,364,431
Truck																	
Single-unit 2-axle 6-tire or more truck	158,602	207,234	43,583	55,693	64,073	73,130	83,527	85,131	86,702	91,366	98,627	100,914	103,114	107,654	^R 109,469	113,143	113,592
Combination truck	46,436	50,960	56,543	75,195	110,527	125,630	151,827	155,535	160,146	165,949	175,309	185,800	191,349	200,499	206,574	213,051	217,596
Bus ^d	^N	^N	^N	^N	^N	152,767	195,371	196,189	197,138	208,977	218,663	219,038	223,076	233,451	^R 239,081	261,430	259,349
Total^e	2,047,212	2,502,912	3,286,284	3,870,399	4,270,411	4,848,878	5,731,210	5,794,157	5,950,903	6,064,114	6,175,877	6,264,819	6,452,639	6,650,950	^R6,831,456	6,927,051	7,072,589
Transit																	
Motor bus ^d	^N	^N	^N	^N	35,068	34,055	33,766	33,941	32,728	32,584	30,307	30,285	30,732	31,550	^R 32,766	^P 34,126	U
Light rail	^N	^N	^N	^N	613	563	919	1,065	1,128	1,135	1,341	1,384	1,540	1,666	^R 1,815	^P 1,941	U
Heavy rail	^N	^N	^N	^N	16,991	16,781	18,467	16,943	17,280	16,465	17,168	16,993	18,556	19,402	19,769	^P 20,764	U
Trolley bus	^N	^N	^N	^N	352	492	311	314	320	303	301	301	296	304	293	^P 299	U
Commuter rail	6,754	6,643	7,390	7,263	10,486	10,515	11,397	11,819	11,780	11,169	12,868	13,267	13,440	12,936	^R 14,008	^P 14,108	U
Demand responsive ^d	^N	^N	^N	^N	^N	586	694	731	797	904	929	977	1,056	1,213	^R 1,183	^P 1,308	U
Ferry boat	^N	^N	^N	^N	ⁱ	ⁱ	460	454	436	418	418	418	^R 426	^R 473	^R 473	^P 499	U
Other	^N	^N	^N	^N	628	707	200	238	293	404	373	439	^R 546	^R 594	^R 710	^P 755	U
Total^e	ⁱ6,754	ⁱ6,643	ⁱ7,390	ⁱ7,263	64,139	63,699	66,213	65,505	64,762	63,382	63,706	64,065	66,591	68,138	^R71,017	^P73,800	U
Rail																	
Intercity/Amtrak ^f	27,462	21,340	9,944	6,326	7,247	7,765	9,748	10,095	9,803	9,976	9,529	8,924	8,127	8,314	8,536	8,578	8,848

KEY: N = data do not exist; P = preliminary; R = revised.

^a All operations other than those operating under 14 CFR 121 and 14 CFR 135.

^b U.S. Department of Transportation, Federal Highway Administration (FHWA), provides data separately for passenger car and motorcycle in its annual *Highway Statistics* series. However, the 1995 summary report provides updated data for passenger car and motorcycle combined. Passenger car figures in this table were computed by U.S. Department of Transportation, Bureau of Transportation Statistics by subtracting the most current motorcycle figures from the aggregate passenger car and motorcycle figures.

^c In July 1997, FHWA published revised passenger-kilometers data for the highway modes for a number of years. The major change reflected the reassignment of some vehicles from the passenger car category to the other 2-axle 4-tire vehicle category. Passenger-kilometers for passenger car, motorcycle, and other 2-axle 4-tire vehicles were derived by multiplying vehicle-kilometers for these vehicles by average vehicle occupancy rates, provided by the Nationwide Personal Transportation Survey, 1977, 1983, and 1995.

^d Motor bus and demand responsive figures are also included in the bus figure for highway.

^e Prior to 1985, excludes demand responsive and most rural and smaller systems funded via Sections 18 and 16(b)2, Federal Transit Act. The series is not continuous between 1980 and 1985. Transit rail modes are measured in car-kilometers. Car-kilometers measure individual vehicle-kilometers in a train. A 10-car train traveling 1 kilometer would equal 1 train-kilometer and 10 car-kilometers.

^f Amtrak began operations in 1971. Does not include contract commuter passengers.

^g Included in passenger car.

^h Included in other single-unit 2-axle 6-tire or more truck.

ⁱ Ferry boat included in other.

^j Includes commuter rail figures only.

NOTES: Air carrier passenger-kilometers are computed by summing of the products of the aircraft-kilometers flown on each interairport segment multiplied by the number of passengers carried on that segment. Highway passenger-kilometers are calculated by multiplying vehicle-kilometers of travel as cited by FHWA by the average number of occupants for each vehicle type. Average vehicle occupancy rates are based on various sources, such as the Nationwide Personal Transportation Survey, conducted by the Federal Highway Administration, and the Truck Inventory and Use Survey, conducted by the Bureau of the Census. Transit passenger-kilometers are the cumulative sum of the distances ridden by each passenger. Rail passenger-kilometers represent the movement of 1 passenger for 1 kilometer.

Numbers may differ slightly from previous year's metric tables because a higher precision conversion factor was used.

1 mile = 1.609344 kilometers

SOURCES:

Air:

Air carrier, domestic, all services:

1960: Civil Aeronautics Board, *Handbook of Airline Statistics 1969* (Washington, DC: 1970), part III, table 2.

1965-70: Ibid., *Handbook of Airline Statistics 1973* (Washington, DC: 1974), part III, table 2.

1975-80: Ibid., *Air Carrier Traffic Statistics* (Washington, DC: 1976, 1981), p. 4 (December 1976) and p. 2 (December 1981).

1985-2000: U.S. Department of Transportation, Bureau of Transportation Statistics, Office of Airline Information, *Air Carrier Traffic Statistics* (Washington, DC: Annual December issues), page 2, line 1.

General aviation:

1960-99: Eno Transportation Foundation, Inc., *Transportation in America, 2000* (Washington, DC: 2001), pp. 14-15.

Highway:

Passenger car and motorcycle:

1960-94: U.S. Department of Transportation, Federal Highway Administration, *Highway Statistics Summary to 1995*, Internet site <http://www.fhwa.dot.gov/ohim/summary95/index.html> as of July 28, 2000, table VM-201A.

1995-2000: Ibid., *Highway Statistics* (Washington, DC: Annual issues), table VM-1, and Internet site www.fhwa.dot.gov/ohim/ohimstat.htm.

Motorcycle:

1970-80: U.S. Department of Transportation, Federal Highway Administration, *Highway Statistics, Summary to 1985* (Washington, DC: 1986), table VM-201A.

1985-2000: Ibid., *Highway Statistics* (Washington, DC: Annual issues), table VM-1, and Internet site www.fhwa.dot.gov/ohim/ohimstat.htm.

Other 2-axle 4-tire vehicle:

1970-94: U.S. Department of Transportation, Federal Highway Administration, *Highway Statistics Summary to 1995*, Internet site <http://www.fhwa.dot.gov/ohim/summary95/index.html> as of July 28, 2000, table VM-201A.

1995-2000: Ibid., *Highway Statistics* (Washington, DC: Annual issues), table VM-1, and Internet site www.fhwa.dot.gov/ohim/ohimstat.htm.

Single-unit 2-axle 6-tires or more truck, combination truck, and bus:

1960-94: U.S. Department of Transportation, Federal Highway Administration, *Highway Statistics Summary to 1995*, Internet site <http://www.fhwa.dot.gov/ohim/summary95/index.html> as of July 28, 2000, table VM-201A.

1995-2000: Ibid., *Highway Statistics* (Washington, DC: Annual issues), table VM-1, and Internet site www.fhwa.dot.gov/ohim/ohimstat.htm.

Transit:

Ferry boat and other:

1992: American Public Transit Association, personal communication, July 19, 2000.

1996-99: American Public Transit Association, personal communication, Aug. 13, 2001.

All other data:

1960-99: American Public Transit Association, *Transit Fact Book* (Washington, DC: 2001), table 30 and similar tables in earlier editions.

Rail, Intercity/Amtrak:

1960-80: Association of American Railroads, *Railroad Facts* (Washington, DC: Annual issues).

1985: Amtrak, *Amtrak FY95 Annual Report* Statistical Appendix (Washington, DC: 1996), p. 4.

1990-2000: Ibid., *Amtrak FY00 Annual Report* Statistical Appendix (Washington, DC: 2001), p. 46.

Table 1-41M: U.S. Tonne-Kilometers of Freight (Millions)

	1960	1965	1970	1975	1980	1985	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001
Air carrier, domestic, all services ^a	807	1,975	3,955	5,066	6,611	7,528	13,233	12,935	14,337	15,585	17,232	18,279	18,777	19,857	^R 20,206	20,735	21,875	19,400
Intercity truck	416,092	524,130	601,509	662,827	810,285	890,583	1,073,080	1,106,659	1,189,877	1,257,036	1,325,655	1,344,634	1,419,093	1,454,132	1,499,392	1,595,750	U	U
Class I rail ^b	835,555	1,018,883	1,116,600	1,101,187	1,341,653	1,280,372	1,509,566	1,516,729	1,557,471	1,619,560	1,752,990	1,906,268	1,979,686	1,969,395	2,010,093	2,092,813	2,140,261	U
Domestic water transportation																		
Coastwise	U	441,708	525,275	461,126	^d 921,460	892,009	699,522	733,100	733,360	654,658	668,084	642,891	595,794	510,761	459,693	427,378	414,445	U
Lakewise	U	110,838	115,946	100,033	90,149	70,347	88,956	80,794	81,444	82,398	85,063	87,166	85,167	90,761	90,013	83,284	84,502	U
Internal	U	160,161	227,487	263,378	331,914	339,747	426,886	423,332	434,544	414,477	434,725	447,232	433,307	429,265	430,540	444,889	441,727	U
Intraport	U	2,392	1,721	1,785	2,331	1,609	1,587	1,413	1,387	1,346	1,887	1,971	2,153	2,012	2,016	1,988	2,176	U
Total domestic water transportation ^c	U	715,099	870,428	826,321	^R 1,345,855	1,303,711	1,216,951	1,238,639	1,250,736	1,152,879	1,189,759	1,179,260	1,116,422	1,032,799	982,262	957,540	942,849	U
Oil pipeline	334,334	446,752	629,248	740,206	858,756	823,862	852,770	844,594	859,632	865,618	863,428	877,589	904,015	900,073	904,891	901,825	U	U
TOTAL	2,280,477	2,706,789	3,222,159	3,336,037	4,363,857	4,305,458	4,666,071	4,720,090	4,871,927	4,911,347	5,149,322	5,325,979	5,438,397	5,375,618	5,416,497	5,568,334	U	U

KEY: R = revised; U = data are not available.

^a Includes freight, express, and mail revenue tonne-kilometers as reported on U.S. DOT Form 41.

^b Revenue tonne-kilometers.

^c Excludes intraterritorial traffic, for which tonne-kilometers were not compiled.

^d Reflects startup between 1975 and 1980 of Alaska pipeline and consequent water transportation of crude petroleum from Alaskan ports to mainland United States for refining.

NOTES: Domestic water transportation numbers may not add to totals due to rounding.

Numbers may differ slightly from previous year's metric tables because a higher precision conversion factor was used.

SOURCES:

Air carrier, domestic, all services:

1960-65: Civil Aeronautics Board, *Handbook of Airline Statistics, 1969* (Washington, DC: 1970).

1970-80: Ibid., *Air Carrier Traffic Statistics* (Washington, DC: Annual issues), p. 2, line 3.

1985-2001: U.S. Department of Transportation, Bureau of Transportation Statistics, Office of Airline Information, *Air Carrier Traffic Statistics* (Washington, DC: Annual issues), p. 2, line 3.

Intercity truck:

1960-98: Eno Transportation Foundation, Inc., *Transportation in America, 2000* (Washington, DC: 2001), p.

Class I rail:

1960-99: Association of American Railroads, *Railroad Facts* (Washington, DC: 2000), p. 27.

Domestic water transportation:

1965-99: U.S. Army Corps of Engineers, *Waterborne Commerce of the U.S.* (New Orleans, LA: Annual issues), part 5, section 1, table 1-4, and similar tables in earlier editions.

Oil pipeline:

1960-70: Eno Transportation Foundation, Inc., *Transportation in America, 1998* (Washington, DC: 1998), p.

1975: Association of Oil Pipe Lines, *Shifts in Petroleum Transportation* (Washington, DC: Annual issues),

1980-99: Ibid., *Shifts in Petroleum Transportation* (Washington, DC: Annual issues), table 1.

Table 1-42M: Average Length of Haul, Domestic Freight and Passenger Modes (Kilometers)

	1960	1965	1970	1975	1980	1985	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999
Freight																
Air carrier	1,534	1,518	1,632	1,741	1,693	1,862	2,235	2,166	2,239	^R 2,168	^R 1,965	^R 1,867	^R 1,901	^R 1,733	^R 1,735	1,611
Truck ^a	438	417	423	460	584	589	629	641	660	655	631	669	686	700	^R 711	737
Class I rail	742	810	829	871	991	1,070	1,168	1,209	1,228	1,278	1,315	1,357	1,355	1,370	1,344	1,344
Water																
Coastwise	2,408	2,416	2,429	2,192	3,082	3,174	2,581	2,744	2,836	2,655	2,659	2,659	2,456	2,140	2,029	2,058
Lakewise	840	795	814	853	863	843	890	861	835	827	818	827	818	816	813	806
Internal	454	478	531	576	652	700	756	777	771	753	776	795	768	750	760	785
Intraport	U	U	U	26	27	24	21	21	19	19	26	26	27	24	24	24
Oil pipeline																
Crude	523	515	483	1,019	1,402	1,250	^R 1,307	^R 1,323	^R 1,336	^R 1,271	^R 1,252	^R 1,283	1,254	^R 1,257	^R 1,234	1,233
Petroleum products	433	539	575	830	666	629	^R 623	^R 610	^R 610	^R 653	^R 666	^R 647	^R 665	^R 665	^R 676	673
Passenger																
Air carrier, domestic, scheduled	938	988	1,091	1,123	1,184	1,220	1,292	1,297	1,297	1,286	1,267	1,273	1,291	1,315	^R 1,307	1,326
Bus, intercity	127	151	171	182	201	195	227	230	219	222	222	225	230	232	232	230
Commuter rail	33	34	36	37	37	38	35	37	37	35	34	39	39	37	^R 37	37
Amtrak ^b	N	N	N	380	348	372	439	457	459	452	436	431	414	412	406	399

KEY: N = data do not exist; R = revised; U = data are not available.

^a Total Class I and Class II motor carriers of freight (less-than-truckload, specialized carrier for truckload, and others).

^b Amtrak began operations in 1971. Data are reported for fiscal years.

NOTES: Average length of haul for freight is calculated by dividing tonne-kilometers in the previous table by estimates of tonnage from the various data sources. The calculation of average length of haul for passenger trips varies by mode: for air carrier it is calculated by dividing revenue passenger-kilometers by revenue passenger enplanements; for commuter rail, intercity bus, and Amtrak it is calculated by dividing passenger-kilometers by number of passengers.

Numbers may differ slightly from previous year's metric tables because a higher precision conversion factor was used.

SOURCES:**Freight:**

Air carrier, truck:

Eno Transportation Foundation, Inc., *Transportation In America, 2000* (Washington, DC: 2001), p. 51.

Class I rail:

Association of American Railroads, *Railroad Facts* (Washington, DC: 2000), p. 36.

Water:

U.S. Army Corps of Engineers, *Waterborne Commerce of the United States, Part 5* (New Orleans, LA: Annual issues), section 1, table 1-4

Oil pipeline:

1960-70: Transportation Policy Associates, Washington, DC, personal communication.

1975-99: Eno Transportation Foundation, Inc., *Transportation in America, 2000* (Washington, DC: 2001), p. 51.

Passenger:

Air carrier:

U.S. Department of Transportation, Bureau of Transportation Statistics, Office of Airline Information, *Air Carrier Traffic Statistics* (Washington, DC: Annual issues).

Intercity bus and commuter rail:

Eno Transportation Foundation, Inc., *Transportation in America, 2000* (Washington, DC: 2001), p. 50.

Amtrak:

1970-85: Amtrak, corporate communication, Jan. 26, 1999.B

1990-99: Amtrak, *Amtrak Annual Report* (Washington, DC: 2000), Statistical Appendix, p. III.

Table 1-46M: U.S. Waterborne Freight (Million metric tons)

	1960	1965	1970	1975	1980	1985	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000
TOTAL	997.8	1,154.8	1,389.5	1,537.7	1,813.4	1,622.4	1,963.0	1,898.0	1,934.2	1,930.7	2,009.1	2,032.5	2,072.1	2,116.6	2,122.4	2,107.0	2,233.1
Foreign	307.8	402.5	527.0	679.2	835.9	702.5	944.9	919.5	941.2	^R 961.6	1,012.1	1,040.9	1,073.6	1,107.3	1,129.8	1,143.8	1,262.6
Imports	191.7	244.8	307.8	432.3	469.5	374.4	544.3	503.9	532.2	588.6	652.7	610.2	664.6	715.1	762.7	780.9	886.1
Exports	116.1	157.8	219.2	246.9	366.4	328.1	400.6	415.7	409.0	373.1	359.4	430.6	409.0	392.2	367.1	362.9	376.5
Domestic	690.0	752.2	862.5	858.5	977.5	920.0	1,018.1	978.5	993.0	969.1	997.0	991.6	998.5	1,009.3	992.6	963.2	970.5
Inland	264.0	335.3	428.3	457.2	485.3	485.0	564.8	544.7	563.4	550.9	561.0	562.7	564.3	572.0	567.0	566.6	570.1
Coastal	189.8	182.8	216.3	210.4	299.0	281.0	270.9	267.2	258.6	246.5	251.3	241.9	242.6	238.7	226.4	207.6	205.8
Great Lakes	140.7	139.4	142.5	117.3	104.4	83.4	99.9	93.8	97.4	99.7	104.1	105.3	104.2	111.3	110.9	103.3	103.8
Intraport	94.5	93.3	73.9	71.0	85.4	67.4	78.4	68.6	69.7	67.5	75.2	75.4	80.7	81.5	81.7	80.5	85.8
Intraterritory	0.9	1.3	1.5	2.6	3.3	3.1	4.1	4.2	3.8	4.5	5.4	6.2	6.6	5.7	6.5	5.4	5.0

KEY: R = revised.**NOTES:** Beginning in 1996, shipments of fish are excluded from domestic tonnage totals.

Numbers may not add due to rounding.

SOURCES: 1960-2000: U.S. Army Corps of Engineers, *Waterborne Commerce of the United States* (New Orleans, LA: March 2002). Part 5, tables 1-3 and 1-6.

Table 1-51M: Crude Oil and Petroleum Products Transported in the United States by Mode

	1975	1980	1985	1990	1995	1996	1997	1998	1999
Crude Oil									
Tonne-kilometers (billions)									
Pipelines ^a	420.5	529.4	488.2	488.8	490.4	493.9	492.6	487.8	468.8
Water carriers	59.3	^c 565.6	655.8	425.1	361.6	295.5	215.1	172.1	146.0
Motor carriers ^b	2.0	3.6	2.6	2.2	2.5	2.5	2.5	2.3	2.0
Railroads	2.2	0.7	1.2	1.0	1.2	1.2	0.7	0.7	0.7
Total	484.0	1099.4	1147.8	917.2	855.7	793.1	710.9	663.0	617.6
% of total									
Pipelines ^a	86.9	48.2	42.5	53.3	57.3	62.3	69.3	73.6	75.9
Water carriers	12.2	51.4	57.2	46.4	42.3	37.3	30.3	26.0	23.6
Motor carriers ^b	0.4	0.3	0.2	0.2	0.3	0.3	0.3	0.3	0.3
Railroads	0.5	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1
Refined Petroleum Products									
Tonne-kilometers (billions)									
Pipelines ^a	319.7	329.4	335.6	364.0	387.2	410.1	407.5	417.1	433.0
Water carriers	375.8	336.4	206.1	230.4	223.7	225.0	216.5	214.8	215.3
Motor carriers ^b	38.3	35.5	39.3	41.2	35.9	40.9	38.0	39.0	40.3
Railroads	18.4	17.5	16.5	19.4	23.2	23.4	23.7	23.7	26.6
Total	752.2	718.7	597.6	654.9	670.0	699.3	685.6	694.5	715.2
% of total									
Pipelines ^a	66.1	30.0	29.2	39.7	45.2	51.7	57.3	62.9	60.5
Water carriers	77.6	30.6	18.0	25.1	26.1	28.4	30.5	31.0	30.1
Motor carriers ^b	7.9	5.0	3.4	4.5	5.3	5.9	5.3	5.9	5.6
Railroads	3.8	1.6	2.7	2.1	2.7	2.9	3.5	3.4	3.7
Combined Crude and Petroleum Products									
Tonne-kilometers (billions)									
Pipelines ^a	740.2	858.8	823.9	852.8	877.6	904.0	900.1	904.9	901.8
Water carriers	435.1	^c 902.0	862.0	655.5	585.3	520.5	431.6	386.9	361.3
Motor carriers ^b	40.3	39.1	41.9	43.4	38.4	43.4	40.4	41.3	42.3
Railroads	20.6	18.2	17.7	20.4	24.2	24.5	24.4	24.4	27.3
Total	1,236.2	1,818.1	1,745.4	1,572.1	1,525.5	1,492.4	1,396.5	1,357.5	1,332.8
% of total									
Pipelines ^a	59.9	47.2	47.2	54.2	57.5	60.6	64.5	66.7	67.7
Water carriers	35.2	49.6	49.4	41.7	38.4	34.9	30.9	28.5	27.1
Motor carriers ^b	3.3	2.2	2.4	2.8	2.5	2.9	2.9	3.0	3.2
Railroads	1.7	1.0	1.0	1.3	1.6	1.6	1.8	1.8	2.1

^a The amount carried by pipeline is based on tonne-kilometers of crude and petroleum products transported through federally regulated pipelines (84%), plus estimated tonne-kilometers of crude and petroleum products transported through nonfederally regulated pipelines (16%).

^b The amount carried by motor carriers is estimated.

^c Reflects the entrance between 1975 and 1980 of the Alaska pipeline, moving crude petroleum for water transportation to U.S. refineries.

NOTE: Numbers may differ slightly from previous year's metric tables because a higher precision conversion factor was used.

SOURCES: 1975: Association of Oil Pipe Lines, *Shifts in Petroleum Transportation* (Washington, DC: Annual issues), table 6.
1980-99: Ibid., *Shifts in Petroleum Transportation* (Washington, DC: Annual issues).

Table 4-3M: Domestic Demand for Refined Petroleum Products by Sector (Petajoules)

	1960	1965	1970	1975	1980	1985	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000
Transportation	10,688	12,524	16,153	18,580	20,057	20,574	23,011	22,642	23,011	23,422	24,013	24,477	25,047	^R 25,311	^R 26,039	^R 26,893	27,696
Industrial	6,067	7,164	8,219	8,599	10,055	8,240	8,778	8,504	9,116	8,915	9,337	9,095	^R 9,559	^R 9,802	^R 9,601	^R 9,918	9,663
Residential and commercial	3,682	4,083	4,547	4,020	3,207	2,659	2,289	2,268	2,247	2,258	2,205	2,195	^R 2,363	^R 2,279	^R 2,100	^R 2,247	2,337
Electric utilities	579	771	2,237	3,346	2,770	1,155	1,323	1,245	1,002	1,106	1,023	694	770	865	1234	992	822
Total petroleum demand	21,016	24,541	31,156	34,544	36,088	32,627	35,402	34,659	35,376	35,701	36,579	36,460	37,739	38,257	38,963	^R 40,050	40,519
Transportation as % of total	51	51	52	54	56	63	65	65	65	66	66	67	66.4	^R 66.1	^R 66.8	^R 67.2	68.4

KEY: R = revised.

NOTES: Transportation's share of U.S. petroleum demand in this table differs slightly from table 4-1 because this table takes into account differences within sectors in the use of various grades of petroleum-based fuel that have different petajoule content per unit volume. Numbers may differ slightly from previous year's metric tables because a higher precision conversion factor was used.

SOURCES:

1960-70: U.S. Department of Energy, Energy Information Administration, *Annual Energy Review 1997*, DOE/EIA-0384(97) (Washington, DC: July 1998), tables 2.1, 5.12b, and A3.
 1975-2000: Ibid., *Monthly Energy Review*, Internet site www.eia.doe.gov/gov/pub/energy.overview/monthly.energy/ as of Aug. 9, 2001, tables, 1.4, 2.2, 2.3, 2.4, 2.5, and 2.6.

Table 4-5M: Fuel Consumption by Mode of Transportation

	1960	1965	1970	1975	1980	1985	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000
Air																	
Certificated carriers ^a																	
Jet fuel (million liters)	7,397	14,721	29,742	28,610	^R 32,248	^R 38,289	47,050	43,557	44,527	45,268	47,225	48,498	^R 49,918	51,707	52,530	54,518	56,193
General aviation ^b																	
Aviation gasoline (million liters)	916	1,105	2,086	1,560	1,968	1,594	1,336	1,340	1,189	1,014	^R 1,007	^R 1,086	^R 1,094	^R 1,105	1,178	1,307	1,275
Jet fuel (million liters)	N	212	787	1,715	2,900	2,616	2,510	2,184	1,870	1,719	^R 1,756	^R 2,120	^R 2,302	2,430	3,084	3,662	3,778
Highway																	
Gasoline, diesel and other fuels (million liters)																	
Passenger car and motorcycle	155,849	188,222	256,950	281,078	265,683	271,414	264,067	244,163	248,425	254,554	257,707	258,424	262,781	265,335	^R 272,175	278,207	276,809
Other 2-axle 4-tire vehicle	N	^e	46,610	72,229	90,078	103,580	134,802	144,667	154,933	162,209	166,982	172,632	179,255	186,953	^R 191,019	200,093	199,991
Single-unit 2-axle 6-tire or more truck	N	52,420	15,021	20,517	26,206	28,008	31,635	30,934	31,180	32,131	34,190	34,887	35,617	36,249	^R 25,805	35,477	36,144
Combination truck	N	25,203	27,815	34,739	49,350	53,015	61,070	63,629	65,170	67,183	70,609	74,865	76,437	76,850	^R 95,233	92,884	97,077
Bus	3,131	3,312	3,104	3,986	3,854	3,157	3,388	3,271	3,324	3,517	3,649	3,663	3,747	3,886	^R 3,937	4,347	4,203
Transit ^c																	
Electricity (million kWh)	2,908	2,584	2,561	2,646	2,446	4,216	4,837	4,853	4,716	4,865	5,081	5,068	5,007	4,988	^R 5,073	^P 5,237	U
Motor fuel (million liters)																	
Diesel	787	939	1,026	1,382	1,632	2,304	2,464	2,518	2,593	2,568	2,567	2,568	2,622	2,714	^R 2,801	^P 2,888	U
Gasoline and other nondiesel fuels ^d	727	469	257	30	42	174	129	129	141	173	227	230	232	225	^R 201	^P 185	U
Compressed natural gas	N	N	N	N	N	N	N	N	4	6	18	41	57	90	^R 140	^P 167	U
Rail, Class I (in freight service)																	
Distillate/diesel fuel (million liters)	13,109	13,597	13,419	13,843	14,778	11,773	11,792	11,000	11,375	11,689	12,621	13,173	13,548	13,533	13,563	14,063	14,006
Amtrak																	
Electricity (million kWh)	N	N	N	180	254	295	330	303	300	301	309	304	293	282	275	283	350
Distillate/diesel fuel (million liters)	N	N	N	238	242	246	310	310	310	314	284	250	269	284	284	280	288
Water																	
Residual fuel oil (million liters)	14,960	11,708	14,286	15,369	33,887	17,375	23,947	25,639	24,844	19,994	20,390	22,282	21,582	18,965	21,276	22,100	24,264
Distillate/diesel fuel oil (million liters)	2,979	2,468	3,100	4,156	5,595	6,431	7,817	7,745	8,398	8,157	8,288	8,854	9,429	9,743	9,823	9,158	8,559
Gasoline (million liters)	N	N	2,264	2,763	3,982	3,986	4,921	6,473	4,982	3,307	3,314	4,014	3,761	3,737	3,620	4,157	4,255
Pipeline																	
Natural gas (million cubic meters)	9,828	14,173	20,450	16,508	17,971	14,265	18,684	17,027	16,642	17,679	19,407	19,831	20,146	21,279	17,995	18,273	18,249

KEY: kWh = kilowatt-hour; N = data do not exist; P = preliminary; R = revised.

^a Domestic operations only.

^b Includes fuel used in air taxi operations, but not commuter operations. Data for 1996 are estimated using new information on nonrespondents and are therefore not comparable to earlier years. See the accuracy statement in the appendix for more detailed information.

^c Prior to 1984, excludes commuter rail, automated guideway, ferryboat, demand responsive vehicles, and most rural and smaller systems.

^d Gasoline and all other nondiesel fuels such as liquefied natural gas, methanol and propane, except compressed natural gas.

^e Included in single-unit 2-axle 6-tire or more truck category.

NOTES: Numbers may differ slightly from previous year's metric tables because a higher precision conversion factor was used.

SOURCES:

Air:

Certificated air carriers:

1960-2000: U.S. Department of Transportation, Bureau of Transportation Statistics, Office of Airline Information, Internet site <http://www.bts.gov/oai/fuel/fueyearly.html> as of September 2001.

General aviation:

1960-70: U.S. Department of Transportation, Federal Aviation Administration, *FAA Statistical Handbook of Aviation - 1972 edition* (Washington, DC: 1973), table 9.12.

1975-93: Ibid., *General Aviation and Air Taxi Activity Survey* (Washington, DC: Annual issues), table 5.1, and similar tables in earlier editions.

1994: Ibid., *FAA Aerospace Forecasts Fiscal Years 2000-2011* (Washington, DC: March 2000), table 29.

1995-2000: Ibid., *FAA Aerospace Forecasts Fiscal Years 2002-2013* (Washington, DC: March 2002), table 30.

Highway:

1960-94: U.S. Department of Transportation, Federal Highway Administration, *Highway Statistics, Summary to 1995*, FHWA-PL-97-009 (Washington, DC: July 1997), table VM-201A. (Revised data obtained from Internet site <http://www.fhwa.dot.gov/ohim/ohimstat.htm> as of Aug. 2001).

1995-2000: Ibid., *Highway Statistics* (Washington, DC: Annual issues), table VM-1.

Transit:

Electricity/motor fuel/compressed natural gas:

1960-99: American Public Transit Association, *Public Transportation Fact Book* (Washington, DC: March 2001), tables 65, 66, 67, and similar tables in earlier editions.

Rail:

1960-2000: Association of American Railroads, *Railroad Facts* (Washington, DC: October 2000), p. 40.

Amtrak:

1975-2000: Amtrak, State and Local Affairs Department, personal communication.

Water:

Residual and distillate/diesel fuel oil:

1960-80: American Petroleum Institute, *Basic Petroleum Data Book* (Washington, DC: Annual issues), tables 10, 10a, 12, and 12a.

1985-2000: U.S. Department of Energy, Energy Information Administration, *Fuel Oil and Kerosene Sales* (Washington, DC: Annual issues), tables 1 and 2, and similar tables in earlier editions.

Gasoline:

1970-2000: U.S. Department of Transportation, Federal Highway Administration, *Highway Statistics* (Washington, DC: Annual issues), table MF-24 and similar tables in earlier editions.

Pipeline:

1960-2000: U.S. Department of Energy, *Natural Gas Annual 2000*, DOE/EIA-0131(00) (Washington, DC: November 2001), table 95.

Table 4-6M: Energy Consumption by Mode of Transportation (Petajoules)

	1960	1965	1970	1975	1980	1985	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000
Air																	
Certificated carriers ^a																	
Jet fuel	278	554	1,119	1,077	1,213	1,441	1,770	1,639	1,675	1,703	1,777	1,825	1,878	1946	1,977	2,051	2,114
General aviation ^b																	
Aviation gasoline	31	37	70	52	66	53	45	45	40	34	34	36	37	37	39	44	43
Jet fuel	N	8	30	65	109	98	94	82	70	65	66	80	87	91	116	138	142
Highway																	
Gasoline, diesel and other fuels																	
Passenger car and motorcycle	5,430	6,558	8,952	9,793	9,256	9,456	9,200	8,507	8,655	8,869	8,978	9,003	9,155	9,244	^R 9,483	9,693	9,644
Other 2-axle 4-tire vehicle	N	^e	1,624	2,516	3,138	3,609	4,696	5,040	5,398	5,651	5,818	6,014	6,245	6,513	^R 6,655	6,971	6,968
Single-unit 2-axle 6-tire or more truck	N	2,026	581	793	1,013	1,083	1,223	1,196	1,205	1,242	1,322	1,349	1,377	1,401	^R 998	1,371	1,397
Combination truck	N	974	1,075	1,343	1,908	2,049	2,361	2,460	2,519	2,597	2,730	2,894	2,955	2,971	^R 3,681	3,591	3,753
Bus	121	128	120	154	149	122	131	126	128	136	141	142	145	150	^R 152	168	162
Transit^c																	
Electricity	10	9	9	10	9	15	17	17	17	18	18	18	18	18	^R 18	^P 19	U
Motor fuel																	
Diesel	30	36	40	53	63	89	95	97	100	99	99	99	101	105	^R 109	^P 112	U
Gasoline and other nondiesel fuels ^d	25	16	9	1	1	6	4	4	5	6	8	8	8	8	^R 7	^P 6	U
Compressed natural gas	N	N	N	N	N	N	N	N	1	1	1	2	2	3	^R 5	^P 6	U
Rail, Class I (in freight service)																	
Distillate/diesel fuel	507	526	519	535	571	455	456	425	440	452	488	509	524	523	524	544	541
Amtrak																	
Electricity	N	N	N	1	1	1	1	1	1	1	1	1	1	1	1	1	U
Distillate/diesel fuel	N	N	N	9	9	10	12	12	12	12	11	10	10	11	11	11	U
Water																	
Residual fuel oil	624	489	596	641	1,414	725	999	1,070	^R 1,037	834	851	930	900	791	888	922	1,012
Distillate/diesel fuel oil	115	95	120	161	216	249	302	299	325	315	320	342	^R 364	377	380	354	331
Gasoline	N	N	79	96	139	139	171	226	174	115	^R 115	140	131	130	126	145	148
Pipeline																	
Natural gas	378	544	786	634	690	548	718	654	639	679	746	762	774	817	691	702	701

KEY: kWh = kilowatt-hour; N = data do not exist; P = preliminary; R = revised; U = unavailable.

^a Domestic operations only.

^b Includes fuel used in air taxi operations, but not commuter operations.

^c Prior to 1984, excludes commuter rail, automated guideway, ferryboat, demand responsive vehicles, and most rural and smaller systems.

^d Gasoline and all other nondiesel fuels such as liquified natural gas, methanol, and propane, except compressed natural gas.

^e Included in other single-unit 2-axle 6-tire or more truck category.

NOTES: The following conversion rates were used:

Jet fuel = 37,626,700 joules/liter	Compressed natural gas = 38,657,950 joules/liter
Aviation gasoline = 33,501,698 joules/liter	Distillate fuel = 38,655,829 joules/liter
Automotive gasoline = 34,839,537 joules/liter	Residual fuel = 41,723,829 joules/liter
Diesel motor fuel = 38,657,950 joules/liter	Natural gas = 38,413,974 joules/m ³

Electricity 1 kWh = 3,600,000 joules/kWh, negating electrical system losses. To include approximate electrical system losses, multiply this conversion factor by 3.

Numbers may differ slightly from previous year's metric tables because a higher precision conversion factor was used.

SOURCES:

Air:

Certificated air carriers:

1960-2000: U.S. Department of Transportation, Bureau of Transportation Statistics, Office of Airline Information Internet site <http://www.bts.gov/oai/fuel/fuelyearly.html> as of Sept. 13, 2001.

General aviation:

1960-80: U.S. Department of Transportation, Federal Aviation Administration, Office of Aviation Policy, Plans, and Management Analysis, *FAA Statistical Handbook of Aviation* (Washington, DC: Annual issues).

1985-93: Ibid., *General Aviation and Avionics Survey* (Washington, DC: Annual issues), table 5.1 and similar tables in earlier editions.

1994: Ibid., *FAA Aerospace Forecasts Fiscal Years 2000-2011* (Washington, DC: March 2000), table 29.

1995-2000: Ibid., *FAA Aerospace Forecasts Fiscal Years 2002-2013* (Washington, DC: March 2002), table 30.

Highway:

1960-94: U.S. Department of Transportation, Federal Highway Administration, *Highway Statistics, Summary to 1995*, FHWA-PL-97-009 (Washington, DC: July 1997), table VM-201A (revised data obtained from internet site <http://www.fhwa.dot.gov/ohim/ohimstat.htm> as of Aug. 2, 2001).

1995-2000: Ibid., *Highway Statistics* (Washington, DC: Annual issues), table VM-1.

Transit:

Electricity/motor fuel/compressed natural gas:

1960-99: American Public Transit Association, *Public Transportation Fact Book* (Washington, DC: March 2001), tables 65, 66, 67, and similar tables in earlier editions.

Rail:

1960-99: Association of American Railroads, *Railroad Facts* (Washington, DC: October 2000), p. 40.

2000: Ibid., *Railroad Facts*, (Draft), personal communication.

Amtrak:

1975-99: Amtrak, State and Local Affairs Department, personal communication.

Water:

Residual and distillate/diesel fuel oil:

1960-80: American Petroleum Institute, *Basic Petroleum Data Book* (Washington, DC: Annual issues), tables 10, 10a, 12, and 12a.

1985-2000: U.S. Department of Energy, Energy Information Administration, *Fuel Oil and Kerosene Sales* (Washington, DC: Annual issues), tables 2 and 4, and similar tables in earlier editions.

Gasoline:

1970-2000: U.S. Department of Transportation, Federal Highway Administration, *Highway Statistics* (Washington, DC: Annual issues), table MF-24 and similar tables in earlier editions.

Pipeline:

1960-98: U.S. Department of Energy, *Natural Gas Annual 1999*, DOE/EIA-0131(99) (Washington, DC: October 2000), table 94.

1999-2000: Ibid., *Natural Gas Annual 2000*, DOE/EIA-0131(00) (Washington DC: November 2001), table 95.

Table 4-7M: Domestic Demand for Gasoline (Million liters) by Mode

	1960	1965	1970	1975	1980	1985	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000
Highway	209,820	253,541	324,025	376,094	383,019	391,960	414,614	408,496	420,084	430,282	437,904	443,125	452,412	457,800	472,018	487,345	487,879
Nonhighway																	
Agriculture	8,675	7,432	7,313	5,924	4,009	4,091	2,579	2,949	3,049	3,204	3,452	3,508	3,475	3,727	3,433	2,661	2,469
Aviation ^a	5,011	1,898	1,488	1,551	1,563	1,444	1,366	1,282	1,303	1,289	1,379	1,389	1,301	1,267	1,329	1,219	1,120
Marine	230	365	2,264	2,762	3,983	3,986	4,923	6,472	4,994	3,307	3,394	4,014	3,761	3,737	3,619	4,156	4,256
Other ^b	6,270	6,235	4,087	3,551	4,280	5,639	6,562	5,608	5,448	3,218	3,263	3,172	3,124	3,749	4,050	3,464	3,537
Total nonhighway	20,185	15,930	15,152	13,788	13,834	15,160	15,430	16,310	14,795	11,018	11,488	12,083	11,662	12,479	12,431	11,500	11,382
TOTAL demand	230,005	269,471	339,178	389,882	396,854	407,121	430,044	424,806	434,878	441,300	449,392	455,209	464,074	470,279	484,449	498,845	499,261

^a Does not include aviation jet fuel.

^b Includes state, county, and municipal use, industrial and commercial use, construction use, and miscellaneous.

NOTES: All nonhighway uses of gasoline were estimated by the U.S. Department of Transportation, Federal Highway Administration.

These estimates may not be comparable to data for prior years due to revised estimation procedures.

Numbers may not add to totals due to rounding.

Numbers may differ slightly from previous year's metric tables because a higher precision conversion factor was used.

SOURCES: Highway: 1960-95: U.S. Department of Transportation, Federal Highway Administration, *Highway Statistics, Summary to 1995* (Washington, DC: 1996), table MF-221.

1996-2000: Ibid., *Highway Statistics* (Washington, DC: Annual issues), table MF-21.

Nonhighway: 1960-2000: Ibid., *Highway Statistics* (Washington, DC: Annual issues), table MF-24, and unpublished revisions.

Table 4-8M: Certificated Air Carrier Fuel Consumption and Travel^a

	1960	1965	1970	1975	1980	1985	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000
Number of aircraft	2,135	2,125	2,679	2,495	3,808	4,678	6,083	6,054	7,320	7,297	7,370	7,411	7,478	7,616	8,111	8,228	U
Average kilometers flown per aircraft (thousands)	784	1,074	1,528	1,408	1,236	1,191	1,250	1,239	1,077	1,129	1,170	1,222	1,260	^R 1,279	^R 1,236	^R 1,268	U
Aircraft-kilometers (millions)																	
Domestic operations	1,381	1,825	3,328	3,135	4,060	4,902	6,378	6,202	6,429	6,690	7,049	7,450	7,743	^R 7,947	^R 8,109	^R 8,496	9,028
International operations	293	457	764	607	645	668	1,223	1,299	1,455	1,547	1,577	1,606	1,679	^R 1,791	^R 1,912	^R 1,942	2,023
Fuel consumption (million liters)																	
Domestic operations	7,397	14,721	29,742	28,610	34,432	38,289	47,049	43,555	44,528	45,270	47,227	48,499	49,918	51,709	52,530	^R 54,518	56,194
International operations	2,143	4,845	8,491	7,378	7,336	9,418	15,002	14,915	15,596	15,569	16,319	17,076	17,632	18,791	19,631	^R 19,873	20,725
Aircraft-kilometers flown per liter																	
Domestic operations	0.19	0.12	0.11	0.11	0.12	0.13	0.14	0.14	0.14	0.15	0.15	0.15	0.16	0.15	0.15	^R 0.18	0.08
International operations	0.14	0.09	0.09	0.08	0.09	0.07	0.08	0.09	0.09	0.10	0.10	0.09	0.10	0.09	0.10	0.10	0.10

KEY: R = revised; U = data are unavailable.

^a Aircraft operating under 14 CFR 121 and 14 CFR 135.

NOTES: Numbers may differ slightly from previous year's metric tables because a higher precision conversion factor was used.

SOURCES:

Number of aircraft:

1960-65: U.S. Department of Transportation, Federal Aviation Administration, *FAA Statistical Handbook of Aviation, 1970 edition* (Washington, DC: 1970), table 5.3.

1970-75: Ibid., *FAA Statistical Handbook of Aviation, Calendar Year 1979* (Washington, DC: 1979), table 5.1.

1980-85: Ibid., *FAA Statistical Handbook of Aviation, Calendar Year 1986* (Washington, DC: 1986), table 5.1.

1990-97: Ibid., *FAA Statistical Handbook of Aviation, Calendar Year 1997* (Washington, DC: unpublished), personal communication, Mar. 19, 1999.

1998-99: Aerospace Industries Association, Aerospace Facts and Figures (Washington DC: Annual Issues), "Active U.S. Air Carrier Fleet."

Aircraft-miles flown:

1960: Civil Aeronautics Board, *Handbook of Airline Statistics 1969* (Washington, DC: 1970), part III, tables 2 and 13.

1965-70: Ibid., *Handbook of Airline Statistics 1973* (Washington, DC: 1974), part III, tables 2 and 13.

1975-80: Ibid., *Air Carrier Traffic Statistics* (Washington, DC: December 1976), pp. 4 and 14; and (December 1981), pp. 2 and 3.

1985-96: U.S. Department of Transportation, Bureau of Transportation Statistics, Office of Airline Information, *Air Carrier Traffic Statistics* (Washington, DC: Annual issues, December), pp. 2 and 3, line 27 plus line 50.

1997-2000: Ibid., Internet site <http://www.bts.gov/programs/oai> as of Aug.10, 2001.

Fuel consumption:

1960-2000: U.S. Department of Transportation, Bureau of Transportation Statistics, Office of Airline Information, Internet site <http://www.bts.gov/programs/oai/fuel/fue yearly.html> as of Aug. 10, 2001.

Table 4-9M: Motor Vehicle Fuel Consumption and Travel

	1960	1965	1970	1975	1980	1985	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000
Vehicles registered (thousands) ^a	73,858	90,358	111,242	137,913	161,490	177,133	193,057	192,314	194,427	198,041	201,802	205,427	210,441	211,580	215,496	220,461	225,821
Vehicle-kilometers traveled (millions)	^R 1,156,735	^R 1,428,795	^R 1,785,928	^R 2,136,668	^R 2,457,943	^R 2,856,306	^R 3,451,016	^R 3,495,576	^R 3,616,439	^R 3,695,662	^R 3,794,170	^R 3,898,951	^R 4,000,585	4,122,648	^R 4,235,024	4,330,835	4,425,379
Fuel consumed (million liters)	219,100	269,158	349,503	412,549	435,171	459,174	494,962	486,664	503,036	519,593	533,134	544,471	557,837	569,273	^R 588,174	611,007	614,221
Average kilometers traveled per vehicle (thousands)	15.6	15.8	16.1	15.4	15.3	16.1	17.9	18.2	18.7	18.7	18.8	19.0	19.0	19.5	19.6	19.6	19.6
Average kilometers traveled per liter	5.3	5.3	5.1	5.2	5.7	6.2	7.0	7.2	7.2	7.1	7.1	7.1	7.2	7.2	^R 7.2	7.1	7.2
Average fuel consumed per vehicle (liters)	2,968	2,979	3,142	2,990	2,695	2,593	2,563	2,532	2,585	2,623	2,642	2,650	2,650	2,691	^R 2,729	2,771	2,720

KEY: R = revised.

^a Includes personal passenger vehicles, buses, and trucks.

NOTES: See tables 4-11, 4-12, 4-13, 4-14, and 4-15 for individual highway vehicles.

Numbers may differ slightly from previous year's metric tables because a higher precision conversion factor was used. 1.609344 kilometers = 1 mile, 3.785412 gallons = 1 liter.

SOURCES: 1960-94: U.S. Department of Transportation, Federal Highway Administration, *Highway Statistics Summary to 1995*, FHWA-PL-97-009 (Washington, DC: July 1997), table VM-201A.

1995-2000: Ibid., *Highway Statistics* (Washington, DC: Annual issues), table VM-1.

Table 4-11M: Passenger Car and Motorcycle Fuel Consumption and Travel

	1960	1965	1970	1975	1980	1985	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000
Vehicles registered (thousands)																	
Passenger cars	61,671	75,258	89,244	106,706	121,601	127,885	133,700	128,300	126,581	127,327	127,883	128,387	129,728	129,749	131,839	132,432	133,621
Motorcycles	574	1,382	2,824	4,964	5,694	5,444	4,259	4,177	4,065	3,978	3,757	3,897	3,872	3,826	3,879	4,152	4,346
Vehicle-kilometers traveled (millions)																	
Passenger cars	944,685	1,163,556	1,475,768	1,664,062	1,789,591	2,006,852	2,265,956	2,185,489	2,208,020	2,212,848	2,262,738	2,314,237	2,365,736	2,418,129	^R 2,493,802	2,525,222	2,578,031
Motorcycles	^a	^a	4,828	9,012	16,415	14,645	15,450	14,806	15,450	15,933	16,415	15,772	15,933	16,224	^R 16,549	17,033	16,864
Fuel consumed (million liters)																	
Passenger cars	155,849	188,222	256,723	280,650	264,911	270,725	263,344	243,466	247,702	253,804	256,931	257,681	262,030	264,570	^R 271,395	277,406	276,015
Motorcycles	^a	^a	227	428	772	689	723	697	723	750	776	742	750	765	^R 780	803	793
Average kilometers traveled per vehicle (thousands)																	
Passenger cars	15.3	15.5	16.5	15.6	14.7	15.7	16.9	17.0	17.4	17.4	17.7	18.0	18.2	18.6	18.8	19.1	19.3
Motorcycles	^a	^a	1.7	1.8	2.9	2.7	3.6	3.5	3.8	4.0	4.4	4.0	4.1	4.2	4.2	4.1	3.9
Average kilometers traveled per liter																	
Passenger cars	6.1	6.2	5.7	5.9	6.8	7.4	8.6	9.0	8.9	8.7	8.8	9.0	9.0	9.1	^R 9.2	9.1	9.3
Motorcycles	^a	^a	21	21	21	21	21	21	21	21	21	21	21	21	21	21	21
Average fuel consumed per vehicle (liters)																	
Passenger cars	2,527	2,501	2,877	2,630	2,179	2,117	1,970	1,898	1,957	1,993	2,009	2,007	2,020	2,039	^R 2,059	2,095	2,066
Motorcycles	^a	^a	80	86	136	127	170	167	178	188	207	190	194	200	201	193	183

KEY: R = revised.

^a Included in passenger car.

NOTES:

Numbers may differ slightly from previous year's metric tables because a higher precision conversion factor was used.

See table 4-12 for other 2-axle 4-tire vehicles.

SOURCES:

Passenger car:

Number registered:

1960-94: U.S. Department of Transportation, Federal Highway Administration, *Highway Statistics Summary to 1995*, FHWA-PL-97-009 (Washington, DC: July 1997), table MV-201.

1995-2000: Ibid., *Highway Statistics* (Washington, DC: Annual issues), table VM-1.

All other categories:

1960-94: U.S. Department of Transportation, Federal Highway Administration, *Highway Statistics Summary to 1995*, FHWA-PL-97-009 (Washington, DC: July 1997), table VM-201A. For 1970-94, the unrevised motorcycle vehicle-miles and fuel consumed are subtracted from the combined passenger car and motorcycle vehicle-miles and fuel consumed from VM-201A. Data was then converted to kilometers.

1995-2000: Ibid., *Highway Statistics* (Washington, DC: Annual issues), table VM-1.

Motorcycle:

Number registered:

1960-94: U.S. Department of Transportation, Federal Highway Administration, *Highway Statistics Summary to 1995*, FHWA-PL-97-009 (Washington, DC: July 1997), table MV-201.

1995-2000: Ibid., *Highway Statistics* (Washington, DC: Annual issues), table VM-1.

All other categories:

1970-85: U.S. Department of Transportation, Federal Highway Administration, *Highway Statistics Summary to 1985*, table VM-201A.

1990-2000: Ibid., *Highway Statistics* (Washington, DC: Annual issues), table VM-1.

Average kilometers traveled per vehicle, average kilometers traveled per liter, average fuel consumed per vehicle: derived by calculation.

Table 4-13M: Single-Unit 2-Axle 6-Tire or More Truck Fuel Consumption and Travel ^a

	1970	1975	1980	1985	1990	1991	1992	1993	1994	1995	1996	1997	^R 1998	1999	2000
Number registered (thousands)	3,681	4,232	4,374	4,593	4,487	4,481	4,370	4,408	4,906	5,024	^R 5,266	5,293	5,735	5,763	5,926
Vehicle-kilometers (millions)	43,613	55,683	64,052	73,064	83,525	85,134	86,744	91,411	98,653	100,914	^R 103,114	107,654	109,469	113,143	113,592
Fuel consumed (million liters)	15,021	20,517	26,206	28,008	31,635	30,934	31,180	32,131	34,190	34,886	^R 35,613	36,249	25,805	35,477	36,143
Average kilometers traveled per vehicle (thousands)	11.8	13.2	14.6	15.9	18.6	19.0	19.8	20.7	20.1	20.1	19.6	20.3	19.2	19.6	19.2
Average kilometers traveled per liter	2.9	2.7	2.4	2.6	2.6	2.8	2.8	2.8	2.9	2.9	2.9	3.0	4.3	3.2	3.1
Average fuel consumed per vehicle (liters)	4,080	4,848	5,992	6,098	7,050	6,904	7,135	7,289	6,968	6,944	^R 6,765	6,848	4,501	6,155	6,098

KEY: R = revised.

^a Beginning in 1998, the Federal Highway Administration (FHWA) used the Census Bureau's 1997 *Vehicle Inventory and Use Survey* (VIUS) for its baseline estimate of single-unit 2-axle 6-tire or more trucks. Prior to 1998, the FHWA used the Census Bureau's 1992 *Transportation Inventory and Use Survey* (TIUS) for its baseline estimates. Therefore, post-1997 data may not be comparable to 1997 and earlier years.

NOTES: In 1995, the U.S. Department of Transportation, Federal Highway Administration revised its vehicle categories beginning with 1993 data to include passenger cars, other 2-axle 4-tire vehicles, single-unit 2-axle 6-tire or more trucks, and combination trucks. Single-unit 2-axle 6-tire or more trucks are on a single frame with at least 2 axles and 6 tires. Pre-1993 data have been reassigned to the most appropriate category. Numbers may differ slightly from previous year's metric tables because a higher precision conversion factor was used.

SOURCES: 1965-94: U.S. Department of Transportation, Federal Highway Administration, *Highway Statistics Summary to 1995*, FHWA-PL-97-009 (Washington, DC: July 1997), table VM-201A. 1995-2000: Ibid., *Highway Statistics* (Washington, DC: Annual issues), table VM-1.

Table 4-14M: Combination Truck Fuel Consumption and Travel ^a

	1965	1970	1975	1980	1985	1990	1991	1992	1993	1994	1995	1996	1997	^R 1998	1999	2000
Number registered (thousands)	787	905	1,131	1,417	1,403	1,709	1,691	1,675	1,680	1,682	1,696	1,747	1,790	1,997	2,029	2,097
Vehicle-kilometers traveled (millions)	51,016	56,488	75,156	110,562	125,690	151,761	155,463	160,130	165,923	175,258	185,879	191,351	200,499	206,574	213,051	217,596
Fuel consumed (million liters)	25,203	27,815	34,739	49,350	53,015	61,070	63,629	65,170	67,183	70,609	74,864	76,439	^R 76,848	95,233	92,883	97,077
Average kilometers traveled per vehicle (thousands)	64.9	62.4	66.5	78.0	89.6	88.8	91.9	95.6	98.7	104.2	109.6	109.5	112.0	103.5	105.1	103.8
Average kilometers traveled per liter	2.0	2.0	2.2	2.2	2.4	2.5	2.4	2.5	2.5	2.5	2.5	2.5	2.6	2.2	2.3	2.3
Average fuel consumed per vehicle (liters)	32,044	30,732	30,722	34,831	37,780	35,737	37,621	38,899	39,983	41,992	44,148	43,754	^R 42,934	47,688	45,778	46,293

KEY: R = revised.

^aBeginning in 1998, the Federal Highway Administration (FHWA) used the Census Bureau's *1997 Vehicle Inventory and Use Survey* (VIUS) for its baseline estimate of combination trucks. Prior to 1998, the FHWA used the Census Bureau's *1992 Transportation Inventory and Use Survey* (TIUS) for its baseline estimates. Therefore, post-1997 data may not be comparable to 1997 and earlier years.

NOTE: Numbers may differ slightly from previous year's metric tables because a higher precision conversion factor was used.

SOURCES: 1965-94: U.S. Department of Transportation, Federal Highway Administration, *Highway Statistics Summary to 1995*, FHWA-PL-97-009 (Washington, DC: July 1997), table VM-201A.
1995-2000: Ibid., *Highway Statistics* (Washington, DC: Annual issues), table VM-1.

Table 4-15M: Bus Fuel Consumption and Travel

	1960	1965	1970	1975	1980	1985	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000
Number registered (thousands)	272	314	378	462	529	593	627	631	645	654	670	686	695	698	716	729	746
Vehicle-kilometers traveled (millions)	6,920	7,564	7,242	9,817	9,817	7,242	9,173	9,334	9,334	9,817	10,300	10,300	10,622	11,011	^R 11,277	12,331	12,233
Fuel consumed (million liters)	3,131	3,312	3,104	3,986	3,854	3,157	3,388	3,271	3,324	3,517	3,649	3,664	3,748	3,888	^R 3,937	4,346	4,202
Average kilometers traveled per vehicle (thousands)	25.7	24.0	19.4	21.1	18.4	12.1	14.6	14.6	14.4	15.1	15.4	15.1	15.1	15.8	15.8	16.9	16.4
Average kilometers traveled per liter	2.2	2.3	2.4	2.4	2.5	2.3	2.7	2.8	2.8	2.8	2.8	2.8	2.8	2.8	2.8	2.8	2.9
Average fuel consumed per vehicle (liters)	11,504	10,539	8,221	8,627	7,291	5,319	5,406	5,181	5,155	5,374	5,443	5,345	5,394	5,568	^R 5,504	5,966	5,633

KEY: R = revised.

NOTES: Includes both publicly and privately owned school, transit, and other commercial buses.
Numbers may differ slightly from previous year's metric tables because a higher precision conversion factor was used.

SOURCES: 1960-94: U.S. Department of Transportation, Federal Highway Administration, *Highway Statistics Summary to 1995*, FHWA-PL-97-009 (Washington, DC: July 1997), table VM-201A.
1995-2000: Ibid., *Highway Statistics* (Washington, DC: Annual issues), table VM-1.

Table 4-16M: Transit Industry Electric Power and Primary Energy Consumption^a and Travel

	1960	1965	1970	1975	1980	1985	1990	1991	1992	1993	1994	1995	1996	1997	^R 1998	^P 1999
Number of vehicles	65,292	61,717	61,298	62,183	75,388	94,368	92,961	96,399	102,251	107,316	115,943	115,874	122,362	126,360	123,855	128,516
Vehicle-kilometers traveled	3,449	3,232	3,030	3,502	3,681	4,492	5,217	5,320	5,399	5,528	5,580	5,713	5,874	6,029	6,106	6,392
Electric power consumed (million kWh hours)	2,908	2,584	2,561	2,646	2,446	4,216	4,837	4,853	4,716	4,865	5,081	5,068	5,007	4,988	5,073	5,237
Primary energy consumed (thousand liters)																
Diesel	787,744	940,296	1,024,332	1,381,903	1,633,027	2,304,324	2,464,417	2,517,897	2,592,795	2,568,444	2,567,365	2,567,592	2,622,208	2,713,959	2,799,770	2,889,666
Gasoline and other nondiesel fuels ^b	726,421	470,148	258,165	28,678	43,154	173,008	128,348	130,472	140,738	172,887	227,136	229,888	231,716	225,092	199,169	184,327
Compressed natural gas	N	N	N	N	N	N	N	N	3,819	5,977	18,302	40,655	57,129	90,494	141,075	168,065

KEY: kWh = kilowatt hour; N = data do not exist; P = preliminary; R = revised.

^a Prior to 1985, excludes commuter rail, automated guideway, urban ferryboat, demand responsive vehicles, and most rural and smaller systems.

^b For 1992-96, includes propane, liquid petroleum gas, liquefied natural gas, kerosene, and all other nondiesel fuels except compressed natural gas. 1960 to 1991 data include propane. Series not contiguous between 1991 and 1992.

NOTES: The heat equivalent factors used in Btu conversions are: diesel = 38,657,950 joules/liter; electric = 3,600,000 joules/kWh, negating electrical system losses (to include electrical system losses, multiply this conversion factor by approximately three) gasoline = 34,839,537 joules/liter.

In January 2000, the American Public Transit Association changed its name to the American Public Transportation Association (APTA). *The Transit Fact Book* is now referred to as the *Public Transportation Fact Book*.

Numbers may differ slightly from previous year's metric tables because a higher precision conversion factor was used.

SOURCE: American Public Transportation Association, *Public Transportation Fact Book* (Washington, DC: March 2001), tables 42, 46, 65, 66, 67, and similar tables in earlier editions of the APTA Transit Fact Book.

Table 4-17M: Class I Rail Freight Fuel Consumption and Travel

	1960	1965	1970	1975	1980	1985	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999
Number in use																
Locomotives ^a	29,031	27,780	27,077	27,846	28,094	22,548	18,835	18,344	18,004	18,161	18,505	18,812	19,269	19,684	20,261	20,256
Cars ^b	1,965,486	1,800,962	1,784,181	1,723,605	1,710,827	1,421,686	1,212,261	1,189,660	1,173,136	1,173,132	1,192,412	1,218,927	1,240,573	1,270,419	1,315,667	1,368,836
Kilometers traveled (millions)																
Freight train-kilometers ^c	650	677	687	648	689	559	611	604	628	652	710	738	754	764	764	789
Locomotive unit-kilometers	N	N	N	2,380	2,464	1,976	2,060	1,992	2,057	2,124	2,261	2,326	2,358	2,290	2,317	2,420
Car-kilometers	45,335	47,212	48,103	44,508	47,117	40,105	42,099	41,244	42,049	43,264	45,842	48,897	51,040	50,952	52,556	54,478
Average kilometers traveled per vehicle (thousands)																
Locomotives	N	N	N	85.5	87.7	87.6	109.4	108.6	114.2	72.7	122.2	123.6	122.4	116.3	114.4	119.5
Cars	23.1	26.2	27.0	25.8	27.5	28.2	34.7	34.7	35.8	36.9	38.4	40.1	41.1	40.1	39.9	39.8
Average kilometers traveled per liters																
Trains	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.06	0.06	0.06	0.06	0.06	0.06	0.06	0.06
Cars	3.46	3.47	13.57	3.22	3.19	3.41	3.57	3.75	3.70	3.70	3.63	3.71	3.77	3.77	3.87	3.87
Fuel consumed (million liters)	13,109	13,597	13,419	13,843	14,778	11,773	11,792	11,000	11,375	11,689	12,621	13,173	13,548	13,533	13,563	14,063
Average fuel consumed per locomotive^a (thousand liters)	451.5	489.5	495.6	497.1	526.0	522.1	626.0	599.7	631.8	643.7	682.0	700.3	703.1	687.5	669.4	694.3

KEY: N = data do not exist.

^a For 1960-80, the total includes a small number of steam and electric units, which are not included in the per locomotive fuel consumption figure.

^b Includes cars owned by Class I railroads, other railroads, and car companies and shippers.

^c Based on the distance run between terminals and/or stations; does not include yard or passenger train-kilometers.

NOTE: Numbers may differ slightly from previous year's metric tables because a higher precision conversion factor was used.

SOURCES:

All data except for locomotive unit-kilometers:

Association of American Railroads, *Railroad Facts* (Washington, DC: October 2000), pp. 33, 34, 40, 48, 50.

Locomotive unit-kilometers:

1975-92: Ibid., *Railroad Ten-Year Trends* (Washington, DC: Annual issues).

1993-99: Ibid., *Analysis of Class I Railroads* (Washington, DC: Annual issues), p. 29.

Table 4-19M: U.S. Government Energy Consumption by Agency and Source (Petajoules)

	Petroleum					Electricity	Natural gas	Coal and other ^b	Total
	Motor gasoline	Distillate and residual fuel oil	Jet fuel and aviation gas	Other ^a	Total				
1990									
Agriculture	4.9	0.8	0.1	0.2	6.0	2.1	1.8	0.1	9.5
Defense	13.2	230.0	763.8	4.6	1,011.7	127.2	120.8	50.3	1,241.7
Energy	1.3	3.1	0.4	0.2	5.1	20.2	10.1	10.6	43.5
GSA	0.1	0.7	0.0	0.0	0.8	9.6	2.5	2.0	14.2
Health and Human Services	0.0	2.2	0.0	0.0	2.2	3.6	2.3	0.2	8.0
Interior	2.2	1.3	0.3	1.2	4.9	1.5	1.3	2.1	7.4
Justice	1.9	0.4	0.2	0.0	2.6	2.0	2.3	0.4	7.0
NASA	0.2	0.9	1.6	0.0	2.7	7.0	3.0	0.3	12.3
Postal Service	9.4	4.7	0.0	0.2	14.3	12.4	4.9	0.6	30.6
Transportation	1.9	6.9	5.8	0.1	14.6	4.1	1.2	0.1	19.0
Veterans Affairs	0.4	2.4	0.0	0.0	2.8	8.3	13.7	1.3	24.9
Other ^c	3.7	4.4	1.1	0.0	9.2	8.5	2.5	0.5	19.6
Total	39.2	258.0	773.3	6.6	1,077.1	206.6	166.5	66.6	1,516.7
2000 ^P									
Agriculture	3.5	0.2	0.0	0.1	3.8	2.1	2.0	0.3	8.7
Defense	14.2	162.9	463.3	1.7	642.1	108.9	86.2	32.6	917.7
Energy	1.1	1.3	0.2	0.1	2.7	16.8	6.2	4.5	31.9
GSA	0.1	0.1	0.0	0.0	0.2	10.3	6.4	1.6	19.6
Health and Human Services	0.4	0.6	0.0	0.1	1.3	3.1	3.5	0.4	8.7
Interior	3.0	0.9	0.2	1.2	5.3	1.8	1.4	0.1	9.0
Justice	5.1	0.4	1.6	0.0	7.1	4.5	5.6	0.5	18.6
NASA	0.2	0.4	1.2	0.0	1.9	6.3	3.3	0.3	12.4
Postal Service	11.0	5.3	0.0	0.0	16.2	19.6	7.8	0.4	46.6
Transportation	0.8	7.7	4.2	0.1	12.8	8.4	0.9	0.0	23.5
Veterans Affairs	1.3	1.3	0.0	0.0	2.5	9.8	15.0	1.6	29.0
Other ^d	2.5	3.0	0.9	0.0	6.5	10.8	4.1	0.6	22.1
Total	43.4	184.0	471.7	3.5	702.6	202.4	142.3	43.2	1,090.4

KEY: GSA = General Services Administration; NASA = National Aeronautics and Space Administration; P = preliminary.

^a Includes liquefied petroleum gases.

^b Includes purchased steam, coal, and other.

^c Includes U.S. Department of Commerce, Panama Canal Commission, Tennessee Valley Authority, U.S. Department of Labor, U.S. Department of Housing and Urban Development, Federal Communications Commission, Office of Personnel Management, U.S. Department of State, Small Business Administration, National Science Foundation, U.S. Department of Treasury, and Environmental Protection Agency.

^d Includes National Archives and Records Administration, U.S. Department of Commerce, U.S. Department of Labor, U.S. Department of State, Environmental Protection Agency, Federal Communications Commission, Federal Trade Commission, Panama Canal Commission, Equal Employment Opportunity Commission, Nuclear Regulatory Commission, Office of Personnel Management, U.S. Department of Housing and Urban Development, U.S. Department of Treasury, Tennessee Valley Authority, Railroad Retirement Board, U.S. Information Agency, and Federal Emergency Management Agency.

NOTES: Numbers may not add to totals due to rounding.

These data include energy consumed at foreign installations and in foreign operations, including aviation and ocean bunkering, primarily by the U.S. Department of Defense. U.S. government energy use for electricity generation and uranium enrichment is excluded. Other energy used by U.S. agencies that produce electricity or enriched uranium is included. The U.S. government's fiscal year runs from October 1 through September 30.

This table uses a conversion factor for electricity of 3,600,000 joules per kilowatt-hour, and a conversion factor for purchased steam of 2,326 Kilojoules per kilogram.

Numbers may differ slightly from previous year's metric tables because a higher precision conversion factor was used.

SOURCE: U.S. Department of Energy, Energy Information Administration, *Annual Energy Review 2000, DOE/EIA-0384(2000)* (Washington, DC: August 2001), table 1.13. Internet site <http://www.eia.doe.gov/emeu/aer/> as of Aug. 10, 2001.

Table 4-20M: Energy Intensity of Passenger Modes
(Kilojoules per passenger-kilometer)

	1960	1965	1970	1975	1980	1985	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000
Air^R																	
Certificated air carrier																	
Domestic operations	5,659	6,633	6,677	5,078	3,755	3,308	3,233	3,062	2,992	2,988	2,913	2,873	2,742	^R 2,731	2,703	2,655	2,585
International operations	6,031	6,748	7,202	5,550	^R 2,845	3,345	2,980	3,022	2,792	2,687	2,718	2,736	2,693	2,733	2,804	2,703	2,628
Highway^b																	
Passenger car	2,947	2,921	3,174	3,109	2,850	2,797	2,499	2,395	2,428	2,481	2,472	2,439	^R 2,418	2,397	^R 2,384	2,407	2,346
Other 2-axle 4-tire vehicle	N	N	4,465	4,308	3,743	3,259	2,918	2,804	2,790	2,803	2,849	^R 2,975	^R 2,977	^R 2,992	^R 2,995	3,024	2,947
Motorcycle	^a	^a	1,639	1,543	1,393	1,243	1,305	1,257	1,305	1,352	1,400	^R 1,491	^R 1,489	^R 1,490	^R 1,490	1,490	1,490
Transit motor bus	N	N	N	N	1,798	2,226	2,441	2,470	2,647	2,586	2,728	2,724	2,751	2,772	^R 2,710	^P 2,651	U
Amtrak	N	N	N	1,562	1,419	1,373	1,353	1,297	1,334	1,326	1,269	1,205	1,408	1,442	1,402	1,381	1,399

KEY: N = data do not exist; P = preliminary; R = revised; U = unavailable.

^a Included in passenger car.

^b For 1995 and subsequent years, highway passenger-kilometers were taken directly from *Highway Statistics* rather than derived from vehicle-kilometers and average occupancy, as is the case for 1960-1994.

NOTES: To calculate total joules, multiply fuel consumed (see tables 4-21, 4-22, 4-24, 4-25) by 37,626,700 joules/liter for air carrier, 34,839,537 joules/liter for passenger car, other 2-axle 4-tire vehicle, and motorcycle, and 38,657,950 joules/liter for transit motor bus and Amtrak.

Numbers may differ slightly from previous year's metric tables because a higher precision conversion factor was used.

SOURCES:

Air:

Certificated air carriers:

Passenger-miles:

Air Transport Association, Internet site <http://www.air-transport.org/public/industry> as of Aug. 22, 2001.

Fuel consumed:

U.S. Department of Transportation, Bureau of Transportation Statistics, Office of Airline Information, Internet site <http://www.bts.gov/oai/fuel/fue yearly.html> as of Aug. 22, 2001.

Highway:

Passenger car:

1960-94: U.S. Department of Transportation, Federal Highway Administration, *Highway Statistics Summary to 1995*, FHWA-PL-97-009 (Washington, DC: July 1997), table VM-201A.

1995-2000: Ibid., *Highway Statistics* (Washington, DC: Annual issues), table VM-1.

Other 2-axle 4-tire vehicle:

1970-94: Ibid., *Highway Statistics Summary to 1995*, FHWA-PL-97-009 (Washington, DC: July 1997), table VM-201A.

1995-2000: Ibid., *Highway Statistics* (Washington, DC: Annual issues), table VM-1.

Motorcycle:

1970-85: Ibid., *Highway Statistics Summary to 1985*, FHWA-PL-97-009 (Washington, DC: July 1997), table VM-201A.

1990-2000: Ibid., *Highway Statistics* (Washington, DC: Annual issues), table VM-1.

Transit motor bus:

American Public Transportation Association, *Public Transportation Fact Book* (Washington, DC: March 2001), tables 30 and 65.

Amtrak:

Amtrak, State and Local Affairs Department, personal communications.

Table 4-21M: Energy Intensity of Certificated Air Carriers, All Services ^a

	1960	1965	1970	1975	1980	1985	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000
Aircraft-kilometers (millions)																	
Domestic operations	1,381	1,825	3,328	3,135	4,060	4,902	6,378	6,202	6,429	6,690	7,049	7,450	7,743	^R 7,947	^R 8,109	^R 8,496	9,028
International operations	293	457	764	607	645	668	1,223	1,299	1,455	1,547	1,577	1,606	1,679	1,793	^R 1,912	^R 1,942	2,023
Available seat-kilometers (millions)																	
Domestic operations	84,040	152,545	343,048	388,306	556,878	717,487	906,165	874,901	897,996	919,722	942,171	971,910	1,008,075	^R 1,036,245	^R 1,045,150	^R 1,103,120	1,145,322
International operations	21,480	47,529	83,622	99,335	139,220	164,094	274,087	276,101	313,474	322,112	320,087	326,954	335,841	349,088	^R 361,850	^R 371,633	389,860
Passenger-kilometers (millions)																	
Domestic operations	49,177	83,504	167,608	211,996	322,334	435,463	547,549	535,213	559,941	569,993	609,925	635,221	684,930	^R 715,827	^R 756,788	^R 770,210	815,163
International operations	13,367	27,019	44,358	50,022	87,489	105,925	189,412	185,701	210,216	218,079	225,937	234,881	246,337	258,749	263,379	^R 277,588	296,382
Fuel consumed (million liters)																	
Domestic operations	7,397	14,721	29,742	28,610	^R 32,248	38,289	47,049	43,555	44,528	45,270	47,227	48,499	49,918	51,709	52,530	54,518	56,194
International operations	2,143	4,845	8,491	7,378	^R 6,613	9,418	15,002	14,915	15,596	15,569	16,319	17,076	17,632	18,791	19,631	19,873	20,725
Seats per aircraft																	
Domestic operations	60.9	83.6	103.1	123.9	137.1	146.4	142.1	141.1	139.7	137.4	133.7	130.5	130.2	^R 130.4	^R 128.9	^R 129.8	126.9
International operations	73.3	104.0	109.4	163.7	215.7	245.7	224.1	212.6	215.5	208.7	203.0	203.6	200.1	194.7	^R 189.3	^R 191.3	192.8
Seat-miles per gallon																	
Domestic operations	11	10	12	14	^R 17	19	19	20	20	20	20	20	20	20	20	20	20
International operations	10	10	10	13	^R 21	17	18	19	20	21	20	19	19	19	18	19	19
Energy intensity (Kilojoules/passenger-kilometer)^b																	
Domestic operations	5,659	6,633	6,677	5,078	^R 3,764	3,308	3,233	3,062	2,992	2,988	2,913	2,873	2,742	2,718	^R 2,612	^R 2,664	2,593
International operations	6,031	6,748	7,202	5,550	^R 2,845	3,345	2,980	3,022	2,792	2,687	2,728	2,735	2,693	2,733	2,805	^R 2,694	2,631
Load factor (%)																	
Domestic operations	58.5	54.7	48.9	54.6	58.0	60.7	60.4	61.2	62.4	62.0	64.7	65.4	67.9	69.1	^R 72.4	69.8	71.2
International operations	62.2	56.8	53.0	54.4	62.8	64.6	69.1	67.3	67.1	67.6	70.6	71.8	73.3	74.1	72.8	^R 74.7	76.0

KEY: R = revised.^a U.S. owned carriers only. Operation of foreign-owned carriers in or out of the United States not included.^b Calculation based on unrounded figures not shown here.

NOTES: Aircraft-kilometers includes all four air-carrier groups (majors, nationals, large regionals, and medium regionals), scheduled and charter, passenger, and all-cargo. Fuel consumed includes majors, nationals, and large regionals, scheduled and charter, passenger, and all-cargo.

Passenger-kilometers includes all four air-carrier groups, scheduled and charter, passenger service only.

International operations include operations outside the United States, including those between the United States and foreign countries and the United States and its territories or possessions.

Heat equivalent factor used for joules conversion is 37,626,700 joules/liter.

Numbers may differ slightly from previous year's metric tables because a higher precision conversion factor was used.

SOURCES:**Aircraft-kilometers, available seat-kilometers, passenger-kilometers, and load factor:**

1960-80: Air Transport Association, Internet site <http://www.air-transport.org/public/industry>, as of July 5, 2000.

1985-2000: U.S. Department of Transportation, Bureau of Transportation Statistics, Office of Airline Information, *Air Carrier Traffic Statistics* (Washington DC: Annual December issues).

Fuel consumed:

1960-2000: U.S. Department of Transportation, Bureau of Transportation Statistics, Office of Airline Information, Internet site <http://www.bts.gov/oai/fuel/fuelyearly.html> as of July 25, 2001.

Seats per aircraft, seat-kilometers per liter, and energy intensiveness: Derived by calculation.

Table 4-22M: Energy Intensity of Passenger Cars, Other 2-Axle 4-Tire Vehicles, and Motorcycles

	1960	1965	1970	1975	1980	1985	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000
Vehicle-kilometers (millions)																	
Passenger car	944,685	1,163,556	1,475,768	1,664,062	1,789,591	2,006,852	2,265,956	2,185,489	2,208,020	2,212,848	2,262,738	2,314,237	2,365,736	2,418,844	^R 2,494,483	2,525,061	2,578,169
Other 2-axle 4-tire vehicle	N	N	197,949	323,478	468,319	629,254	925,373	1,044,464	1,137,806	1,200,571	1,231,148	1,271,382	1,314,834	1,369,552	^R 1,396,911	1,450,019	1,487,034
Motorcycle	^b	^b	4,828	9,012	16,415	14,645	15,450	14,806	15,450	15,933	16,415	15,772	15,933	16,254	^R 16,576	17,059	16,898
Passenger-kilometers (millions)^a																	
Passenger car	1,842,699	2,245,035	2,817,961	3,144,658	3,238,000	3,369,966	3,672,523	3,540,557	3,553,432	3,561,478	3,621,024	3,680,570	3,761,037	3,844,723	^R 3,965,424	4,015,313	4,098,999
Other 2-axle 4-tire vehicle	N	N	363,712	584,192	838,468	1,107,229	1,609,344	1,797,637	1,934,431	2,016,508	2,042,258	2,021,336	2,088,929	2,177,442	^R 2,222,504	2,306,190	2,364,126
Motorcycle	^b	^b	4,828	9,656	19,312	19,312	19,312	19,312	19,312	19,312	19,312	17,703	17,703	17,703	17,703	19,312	19,312
Fuel consumed (million liters)																	
Passenger car	155,849	188,222	256,723	280,650	264,911	270,725	263,344	243,466	247,702	253,804	256,931	257,681	262,030	264,570	^R 271,395	277,406	276,017
Other 2-axle 4-tire vehicle	N	N	46,610	72,229	90,078	103,580	134,802	144,667	154,933	162,209	166,982	172,634	179,254	186,954	^R 191,019	200,093	199,991
Motorcycle	^b	^b	227	428	772	689	723	697	723	750	776	742	750	765	^R 780	801	795
Energy intensity (kilojoules/passenger-kilometer)^c																	
Passenger car	2,947	2,921	3,174	3,109	2,850	2,799	2,498	2,396	2,429	2,483	2,472	2,439	2,427	2,397	^R 2,384	2,407	2,346
Other 2-axle 4-tire vehicle	N	N	4,465	4,308	3,743	3,259	2,918	2,804	2,790	2,803	2,849	2,975	2,990	2,991	^R 2,995	3,023	2,947
Motorcycle	^a	^a	1,639	1,543	1,393	1,243	1,304	1,257	1,304	1,352	1,400	1,460	1,475	1,505	^R 1,535	1,446	1,434

KEY: N = data do not exist; R = revised.

^a Passenger-kilometers are derived by multiplying vehicle-kilometers by an average occupancy rate for that vehicle type based on data provided by the Federal Highway Administration, Nationwide Personal Transportation Survey, 1977, 1983, 1995. Average vehicle occupancy rates are as follows:

passenger car (1960-97): 1.95, 1.93, 1.91, 1.89, 1.81, 1.68, 1.62, 1.62, 1.61, 1.61, 1.60, 1.59, 1.59, 1.59;
other 2-axle 4-tire vehicle (1960-97): 1.87, 1.85, 1.83, 1.81, 1.79, 1.76, 1.74, 1.72, 1.70, 1.68, 1.66, 1.64, 1.64, 1.64;
motorcycle (1960-97): 1.1, 1.1, 1.1, 1.1, 1.2, 1.3, 1.3, 1.27, 1.25, 1.23, 1.21, 1.18, 1.18, 1.18.

^b Included in passenger car.

^c Energy Intensity (kilojoule/passenger-kilometer) is calculated by converting the fuel consumption in gallons to the energy equivalent kilojoule units and dividing by the passenger-kilometers. The heat equivalent factor used for kilojoule conversion is 34,839,537 joules/liter.

NOTES: In 1995, the U.S. Department of Transportation, Federal Highway Administration revised its vehicle type categories for 1993 and later data.

These new categories include passenger car, other 2-axle 4-tire vehicle, single-unit 2-axle 6-tire or more truck, and combination truck.

Other 2-axle 4-tire vehicle includes vans, pickup trucks, and sport utility vehicles. In previous years, some minivans and sport utility vehicles were included in the passenger car category. Single-unit 2-axle 6-tire or more trucks are on a single frame with at least 2 axles and 6 tires. Pre-1993 data have been reassigned to the closest available category.

Numbers may differ slightly from previous year's metric tables because a higher precision conversion factor was used.

SOURCES:

Vehicle-kilometers:

Passenger car:

1960-94: U.S. Department of Transportation, Federal Highway Administration, *Highway Statistics Summary to 1995*, FHWA-PL-97-009 (Washington, DC: July 1997), table VM-201A.

1995-2000: Ibid., *Highway Statistics* (Washington, DC: Annual issues), table VM-1.

Other 2-axle 4-tire vehicle:

1960-94: Ibid., *Highway Statistics, Summary to 1995*, FHWA-PL-97-009 (Washington, DC: July 1997), table VM-201A.

1995-2000: Ibid., *Highway Statistics* (Washington, DC: Annual issues), table VM-1.

Motorcycle:

1970-85: Ibid., *Highway Statistics, Summary to 1985* (Washington, DC: 1986), table VM-201A.

For 1970-94, the unrevised motorcycle vehicle-miles are subtracted from the combined passenger car and motorcycle vehicle-miles from VM-201A. Data was then converted to kilometers.

1990-2000: Ibid., *Highway Statistics* (Washington, DC: Annual issues), table VM-1.

Passenger-kilometers:

1960-97: Vehicle-miles multiplied by vehicle occupancy rates.

1998-2000: Ibid., *Highway Statistics* (Washington, DC: Annual issues), table VM-1.

Fuel consumed:

1960-94: U.S. Department of Transportation, Federal Highway Administration, *Highway Statistics Summary to 1995*, FHWA-PL-97-009 (Washington, DC: July 1997), table VM-201A.

For 1970-94, the unrevised motorcycle fuel consumed is subtracted from the combined passenger car and motorcycle fuel consumed from VM-201A. Data was then converted to kilometers.

1995-2000: Ibid., *Highway Statistics* (Washington, DC: Annual issues), table VM-1.

Table 4-23M: Average Fuel Efficiency of U.S. Passenger Cars and Light Trucks

	1980	1985	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000
Average U.S. passenger car fuel efficiency (kmpl) (calendar year)													
Passenger car ^a	^R 6.8	^R 7.4	^R 8.6	^R 9.0	8.9	^R 8.8	^R 8.8	9.0	9.0	9.1	9.2	9.1	U
Other 2-axle 4-tire vehicle	5.2	6.1	6.8	7.2	7.4	7.4	7.4	7.4	7.3	7.3	7.3	7.3	U
New vehicle fuel efficiency (kmpl)^b (model year)													
Light-duty vehicle (passenger cars plus light trucks)													
Domestic	9.1	10.2	10.2	10.4	^R 10.1	^R 10.3	^R 10.0	10.1	10.2	9.9	9.9	^d N	^d N
Imported	12.2	12.9	12.1	12.1	11.9	11.9	^R 11.8	11.9	11.8	11.7	11.7	^d N	^d N
Passenger car	10.3	11.7	11.9	12.1	11.9	12.1	12.0	12.2	12.1	12.2	12.2	12.0	12.1
Domestic	9.6	11.2	11.4	11.6	11.5	11.8	11.7	11.8	^R 11.9	11.8	^R 12.2	^R 11.9	12.1
Imported	12.6	13.4	12.7	12.8	12.4	12.6	^R 12.6	12.9	^R 12.6	12.8	^R 12.4	^R 12.3	12.0
Light truck (<8,500 lbs GVWR)	7.9	8.8	8.8	9.1	8.8	8.9	8.8	8.7	8.8	8.8	9.0	8.9	9.0
Domestic	7.1	8.3	8.6	8.9	8.7	8.8	8.7	8.6	8.7	8.6	8.7	^d N	^d N
Imported	10.3	11.3	9.8	9.8	9.7	9.7	^R 9.4	9.1	9.4	9.4	9.7	^d N	^d N
CAFE standards (kmpl)^b (model year)													
Passenger car	8.5	11.7	11.7	11.7	11.7	11.7	11.7	11.7	11.7	11.7	11.7	11.7	11.7
Light truck	^c 6.8/6.0	8.3	8.5	8.6	8.6	8.7	8.7	8.8	8.8	8.8	8.8	8.8	8.8

KEY: CAFE = Corporate Average Fuel Economy; GVWR = gross vehicle weight rating; kmpl = kilometers per liter; N = data do not exist; R = revised; U = data are not available.

^a From 1980 to 1994, passenger car fuel efficiency includes motorcycles.

^b Assumes 55% city and 45% highway-kilometers. The source calculated average kilometers per liter for light-duty vehicles by taking the reciprocal of the sales-weighted average of liters per kilometer. This is called the harmonic average.

^c 2 Wheel Drive/4 Wheel Drive. No combined figure available for this year.

^d Beginning with MY 1999, the total light truck fleet ceased to be categorized by either domestic or import fleets.

NOTES: The fuel efficiency figures for light duty vehicles represent the sales-weighted harmonic average of the combined passenger car and light truck fuel economies.

Numbers may differ slightly from previous year's metric tables because a higher precision conversion factor was used.

SOURCES:

Average U.S. passenger car fuel efficiency:

1980-94: U.S. Department of Transportation, Federal Highway Administration, *Highway Statistics Summary to 1995*, FHWA-PL-97-009 (Washington, DC: July 1997), table VM-201A (Revised data obtained from Internet site <http://www.fhwa.dot.gov/ohim/ohimstat.htm> as of Aug. 2, 2001).

1995-99: Ibid., *Highway Statistics* (Washington, DC: Annual issues), table VM-1.

New vehicle fuel efficiency (based on model year production):

1980-2000: U.S. Department of Transportation, National Highway Traffic Safety Administration, *Automotive Fuel Economy Program, Annual Update Calendar Year 2000*, table II-6, Internet site www.nhtsa.dot.gov/cars/problems/studies/fuelecon/index.html as of Aug. 9, 2001.

CAFE standards:

1980-2000: U.S. Department of Transportation, National Highway Traffic Safety Administration, *Automotive Fuel Economy Program, Annual Update Calendar Year 2000*, table I-1, Internet site www.nhtsa.dot.gov/cars/problems/studies/fuelecon/index.html as of Aug. 9, 2001.

Table 4-24M: Energy Intensity of Transit Motor Buses

	1960	1965	1970	1975	1980	1985	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999
Vehicle-kilometers (millions)	2,536	2,459	2,268	2,456	2,699	2,998	3,428	3,487	3,505	3,557	3,479	3,515	3,484	3,713	3,687	3,663
Passenger-kilometers (millions)	N	N	N	N	35,084	34,118	33,796	33,957	32,670	32,509	30,256	30,256	30,738	32,831	33,157	34,126
Fuel consumed (million liters diesel)	787	939	1,026	1,382	1,632	1,961	2,131	2,169	2,241	2,180	2,139	2,135	^R 2,188	2,260	^R 2,298	2,339
Energy intensity (Kilojoules/passenger-kilometer)	N	N	N	N	1,798	2,222	2,438	2,469	2,652	^R 2,593	^R 2,732	2,728	^R 2,751	2,661	^R 2,679	2,650

KEY: N = data do not exist; R = revised.

NOTES: Heat equivalent factor used for joules conversion is 38,657,950 joules/liter.

In January 2000, the American Public Transit Association changed its name to the American Public Transportation Association. The *Transit Fact Book* is now referred to as the *Public Transportation Fact Book*.

Numbers may differ slightly from previous year's metric tables because a higher precision conversion factor was used.

SOURCE: American Public Transportation Association, *Public Transportation Fact Book* (Washington, DC: March 2001), tables 65 and 79, and similar tables in earlier editions of the *Transit Fact Book*.

Table 4-25M: Energy Intensity of Class I Railroad^a Freight Service

	1960	1965	1970	1975	1980	1985	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000
Revenue freight tonne-kilometers (millions)	835,555	1,018,882	1,116,600	1,101,187	1,341,653	1,280,372	1,509,566	1,516,728	1,557,470	1,619,560	1,752,990	1,906,268	1,979,686	1,969,394	2,010,092	2,092,813	2,140,261
Car-kilometers (millions)	45,335	47,212	48,103	44,508	47,117	40,105	42,099	41,244	42,049	43,264	45,842	48,897	51,040	50,952	52,556	54,478	55,667
Tonnes per car load	40	44	50	55	61	61	60	60	60	58	58	59	60	57	58	57	57
Fuel consumed (million liters)	13,109	13,597	13,419	13,843	14,778	11,773	11,792	11,000	11,375	11,689	12,621	13,173	13,548	13,533	13,563	14,063	14,006
Energy intensity (Kilojoules/revenue freight tonne-kilometer)	606	516	465	486	426	355	302	280	282	279	278	267	265	266	261	260	253
Energy intensity (Kilojoules/car-kilometer)	11,178	11,134	10,784	12,024	12,125	11,348	10,828	10,311	10,458	10,445	10,643	10,415	10,261	10,268	9,976	9,979	9,726

^a Class I railroads are those that have operating revenues of \$255 million or more.

NOTES: The heat equivalent factor used for joules conversion is 38,655,900 joules/liter.

Numbers may differ slightly from previous year's metric tables because a higher precision conversion factor was used.

SOURCE: Association of American Railroads, *Railroad Facts* (Washington, DC: November 2001), pp. 34, 37, and 40.